

## **Appendix D – Comment Letters and Responses**



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Bureau of Reclamation  
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Re: Draft Environmental Assessment and Findings of No Significant Impact,  
*Glenn Colusa Irrigation District Stony Creek Fan Aquifer Performance  
Testing Plan*

Dear Ms. LaFramboise:

Butte Environmental Council, a public benefit corporation representing 850 members, is submitting the following comments and questions for the Draft Environmental Assessment ("EA") and Findings of No Significant Impact ("FONSI"), *Glenn Colusa Irrigation District Stony Creek Fan Aquifer Performance Testing Plan* ("SCF Aquifer Plan" or "Project").

We are concerned that the Bureau of Reclamation's draft environmental review of the Glenn Colusa Irrigation District's ("GCID's") plan does not comply with the requirements of National Environmental Policy Act ("NEPA"), 42 U.S.C. §4321 *et seq.* First, we believe that the Bureau needs to prepare an environmental impact statement ("EIS") on this proposal to drill test and production wells for the extraction of groundwater, a proposal that is integrally related to other inter-connected actions by GCID, the Bureau and others in the Sacramento Valley, and which has the potential to have significant and far-reaching environmental impacts. Second, the EA itself violates the dictates of NEPA because, among other things, it fails to provide a reasoned analysis and explanation of the Bureau's proposed finding of no significant impact.

The two-year aquifer performance testing program that the Bureau has proposed to fund will have significant effects on the environment – both standing alone and when reviewed in conjunction with the multitude of other plans that incorporate and are dependent on the SCF Aquifer Plan. Ironically, the Bureau appears to recognize that there are significant potential adverse impacts associated with the Project, but instead of conducting an EIS as required, attempts to assure the public that the Project will be

“modified or terminated as necessary to avoid any significant adverse impacts.” EA/FONSI at p. 14. Of course, this is not a permissible approach under NEPA.<sup>1</sup> Moreover, in light of the wholly inadequate monitoring planned for the Project’s so-called “test wells,” the suggestion that the public should be required to depend on that insufficient monitoring to provide the necessary advance notice of “significant adverse impacts” is an unacceptable position.

We strongly urge the Bureau to prepare NEPA documentation on the SCF Aquifer Plan that comports with the law, and specifically to withdraw this EA/FONSI as inadequate and complete a full EIS on the proposed Project before any steps are taken to implement the proposed action.

## **I. The Bureau Must Prepare an Environmental Impact Statement on the Proposed SCF Aquifer Plan**

1-1

NEPA requires federal agencies to prepare a detailed environmental impact statement on all “major Federal actions significantly affecting the quality of the human environment . . . .” 42 U.S.C. §4332(2)(C). The purpose of this mandatory requirement is to ensure that detailed information concerning potential environmental impacts is made available to agency decisionmakers and the public before the agency makes a decision. *Robertson v. Methow Valley Citizens Council*, 490 U.S. 332, 349 (1989).

Under NEPA’s procedures, an agency may prepare an EA in order to decide whether the environmental impacts of a proposed agency action are significant enough to warrant preparation of an EIS. 40 C.F.R. §1508.9. An EA must “provide sufficient evidence and analysis for determining whether to prepare an [EIS]” (*id.*), and must demonstrate that it has taken a “‘hard look’ at the potential environmental impact of a project.” *Blue Mountains Biodiversity Project v. Blackwood*, 161 F.3d 1208, 1212 (9th Cir. 1998) (internal quotation marks omitted). However, the U.S. Court of Appeals for the Ninth Circuit has cautioned that “[i]f an agency decides not to prepare an EIS, it must supply a convincing statement of reasons to explain why a project’s impacts are insignificant.” *Id.* (internal quotation marks omitted). So long as there are “substantial questions whether a project *may* have a significant effect on the environment,” an EIS must be prepared. *Id.* (emphasis added and internal quotation marks omitted). Thus, “the

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<sup>1</sup> Perhaps even more telling, the Bureau actually began its own Programmatic EIS on this project and the interconnected actions that are integrally related to it, but never completed that EIS and now has impermissibly broken out this current segment of the overall Program for piecemeal review in the present draft EA. See 68 Federal Register 46218 (Aug 5, 2003) (promising a Programmatic EIS on these related activities, “include[ing] groundwater substitution in lieu of surface water supplies, conjunctive use of groundwater and surface water, refurbish existing groundwater extraction wells, install groundwater monitoring stations, install new groundwater extraction wells...” *Id.* At 46219. See also [http://www.usbr.gov/mp/nepa/nepa\\_projdetails.cfm?Project\\_ID=788](http://www.usbr.gov/mp/nepa/nepa_projdetails.cfm?Project_ID=788) (current Bureau website on “Short-term Sacramento Valley Water Management Program EIS/EIR”).

threshold for requiring an EIS is quite low.” *NRDC v. Duvall*, 777 F. Supp. 1533, 1538 (E.D. Cal. 1991).

NEPA regulations promulgated by the Council on Environmental Quality identify factors that the Bureau must consider in assessing whether a project may have significant environmental effects, including:

- (1) “The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.” 40 C.F.R. §1508.27(b)(5).
- (2) “The degree to which the effects on the quality of the human environment are likely to be highly controversial.” *Id.* §1508.27(b)(4).
- (3) “Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate on a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.” *Id.* §1508.27(b)(7).
- (4) “The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.” *Id.* §1508.27(b)(6).
- (5) “The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.” *Id.* §1508.27(b)(9).

Here, the Bureau has failed to take a hard look at the environmental impacts of the SCF Aquifer Plan. As detailed below, there are substantial questions about whether the Project’s proposed aquifer drilling will have significant effects on the region’s environmental and hydrological conditions. There are also substantial questions about whether the Project will have significant adverse environmental impacts when considered in conjunction with the other related water projects underway and proposed in the region. The Bureau simply cannot, consistent with NEPA, allow these foreseeable environmental impacts to escape full analysis in an EIS of the proposed SCF Aquifer Plan.

**A. The Project may result in significant adverse environmental impacts and poses significant unknown risks to the environment.**

1-2

There is substantial evidence that the SCF Aquifer Plan may have significant impacts on the aquifer system underlying the project and the adjacent region that overlies the Tuscan Formation. This alone warrants the preparation of an EIS.

Additionally, an EIS is necessary where “[a] project[’s] ... effects are ‘highly uncertain or involve unique or unknown risks.’” *Blue Mountains Biodiversity Project*, 161 F.3d at 1213 (quoting 40 C.F.R. §1508.27(b)(5)). Here, the draft EA/FONSI fails to adequately address gaps in existing scientific research on the hydrology of the aquifer

system and the extent to which these gaps affect the ability of the Bureau accurately to assess the Project's environmental impacts.

**1. Existing research on groundwater conditions indicates that the Project may have significant impacts on the aquifer system.**

1-3

The EA fails to describe significant characteristics of the aquifer that the Project proposes to exploit. These characteristics are relevant to an understanding of the potential environmental effects associated with the Project's proposed extraction of 26,530 acre feet ("af") of groundwater. First, the draft EA/FONSI fails to describe a significant saline portion of the aquifer stratigraphy of the project area. According to Toccoy Dudley, former Groundwater Geologist with the Department of Water Resources and former director of the Butte County Water and Resources Department, saline groundwater aquifer systems of marine origin underlie the various freshwater strata. The approximate contact between fresh and saline groundwater occurs at a depth ranging from 1500 to 3000 feet. (Dudley 2005) (A list of all references cited in these comments can be found at the end of this letter.)

Second, the EA fails to discuss the pressurized condition of the down-gradient portion of the Tuscan formation, which underlies the Project area. Dudley finds significant importance in the pressurized state of the lower Tuscan aquifer located in the Butte Basin. "It is interesting to note that groundwater elevations up gradient of the Butte Basin, in the lower Tuscan aquifer system, are higher than the ground surface elevations in the south-central portion of Butte Basin. This creates an artesian flow condition when wells in the central Butte Basin are drilled into the lower Tuscan aquifer." (Dudley 2005). The artesian pressure indicates recharge is occurring in the up-gradient portions of the aquifer located along the eastern margin of the Sacramento Valley several miles east of the project.

Third, the EA fails to describe the direction of movement of water through the Lower Tuscan Formation. According to Dudley: "From Tehama County south to the city of Chico, the groundwater flow direction in the lower Tuscan is westerly toward the Sacramento River. South of Chico, the groundwater flow changes to a southwesterly direction along the eastern margin of the valley and to a southerly direction in the central portion of the Butte Basin." (Dudley 2005).

Fourth, the draft EA fails to describe the ancient age of water stored in the down gradient portion of the aquifer located under the Project. According to Dudley, "Test results indicate that the 'age' of the groundwater samples ranges from less than 100 years to tens of thousands of years. In general, the more shallow wells in the Lower Tuscan Formation along the eastern margin of the valley have the 'youngest' water and the deeper wells in the western and southern portions of the valley have the 'oldest' water." (Dudley 2005).

All of these characteristics are important to a full understanding of the environmental impacts of the Project because there are numerous indications that other

aquifer strata associated with the Lower Tuscan Formation are being operated near the limit of overdraft and could be affected by the Project. (Butte County 2007)). The Bureau has not considered this important historic information in the draft EA. According to Dudley, the Chico area has a “*long term average decline in the static groundwater level of about 0.35 feet-per-year.*” (Dudley 2007) (Emphasis added.) Declining aquifer levels are not limited to the Chico Municipal area. This trend of declining aquifer levels in Chico, Durham and the Cherokee Strip is illustrated in a map submitted with this comment letter. (CH2M Hill 2006).

This trend of declining groundwater elevations has been noted specifically in the Esquon Ranch area. A 2007 Butte Basin Groundwater Status Report describes the “historical trend” in the Esquon Ranch area as showing “seasonal fluctuation (spring to fall) in groundwater levels of about 10 to 15 feet during years of normal precipitation and less than 5 feet during years of drought.” It further notes: “Long-term comparison of spring-to-spring groundwater levels shows a decline of approximately 15 feet associated with the 1976-77 and 1986-94 droughts. Overall comparison of spring-to-spring groundwater levels associated with this composite portion of the aquifer system indicates that there was little change in spring groundwater levels until 2000. *Since 2000 spring groundwater levels have declined approximately 8 feet.*” (emphasis added.) In addition, there is evidence that “[t]he spring 2006 groundwater level measurement was approximately 3 feet higher than the previous spring measurement, but ... remain[ed] approximately 2-3 feet below the historical spring levels. Fall groundwater levels [were] approximately 5 to 8 feet lower than those measured during either of the previous drought periods on the hydrograph.” (Butte Basin Water Users Association, 2007.) Thus, “*it appears that there may be a downward trend in groundwater levels in this well.*” *Id.* (emphasis added).

In light of this downward trend in regional groundwater levels, the Bureau’s environmental review should closely analyze questions regarding the replenishment of the aquifers affected by the proposed Project. The draft EA fails to provide any in-depth assessment of these issues. For example, the EA fails to discuss the best available estimates of where Tuscan formation replenishment occurs. Dudley has analyzed the age of the groundwater in the Lower Tuscan Formation to attempt to shed light on this process: “Utilizing the Tritium (H3) Helium-3 (He3) ratio, the age of each sample was estimated. Test results indicate that the “age” of the groundwater samples ranges from less than 100 years to tens of thousands of years. In general, the more shallow wells in the Lower Tuscan Formation along the eastern margin of the valley have the “youngest” water and the deeper wells in the western and southern portions of the valley have the “oldest” water. The youngest groundwater in the Lower Tuscan Formation is probably nearest to recharge areas.” (Dudley 2005). The Bureau should prepare an EIS that considers this and other existing research to evaluate the Project’s anticipated effect on regional hydrology.

2. **The Project proposes to rely on inadequate monitoring to avoid the acknowledged possibility of significant adverse environmental impacts.**

1-4

The EA relies on the existence of monitoring wells and a local groundwater management plan to determine when the effects of the proposed extraction become “adverse.” However, the Project’s proposed monitoring is insufficient and cannot justify the significant risk of adverse environmental impacts.

For example, the EA fails to identify the standards that will be used to monitor the Project’s impacts. It fails to identify the specific monitoring locations on the up-gradient recharge portion of the lower Tuscan, and why such locations should be deemed effective for monitoring the effects of the proposed groundwater extraction. Another example of the inadequacy of the proposed monitoring is that the EA fails to include any plan to monitor stream flow of creeks located in the presumed recharge area for the Lower Tuscan Formation located on the eastern edge of the Sacramento Valley.

Adequate monitoring is particularly important in light of the significant risks posed by the Project to the health of the region’s groundwater. Moreover, to the extent this Project is conceived as a “testing” program that will provide the basis for future groundwater extraction, its failure to include adequate monitoring protocols is even more disturbing and creates the risk of significant long-term impacts from the Project.

a. The Bureau’s assertion that the Project will be modified or halted in the event of significant adverse impacts is an empty promise in light of the wholly inadequate monitoring provided for in the Project.

1-5

The EA states that the “intent” of the proposed production drilling is to produce “measurable effects.” EA/FONSI at p. 27. The Project provides that “[i]f monitoring indicates a significant decline in groundwater levels in the relevant vicinity of the test pumps, ... that is not directly attributable to a cause other than the proposed action,” the test pumping “would be modified or terminated as necessary to avoid any significant adverse impacts.” *Id.* at pp. 27-28; *see also* EA/FONSI at p. 14 (providing same assurance).

The Bureau thus recognizes the potential for significant decline in groundwater levels as a result of the proposed activity. This acknowledgement alone is sufficient to require a full EIS. Moreover, as detailed below, the monitoring proposed by the Project is so inadequate that there can be no guarantee that adverse impacts will be discovered, or that they will be discovered in time to avoid significant environmental impacts.

Similarly, the EA recognizes the potential long-term impacts of the proposed development: “Increased use of groundwater in Glenn County by the SCF Partners under future conjunctive use scenarios could potentially affect groundwater levels, water quality, surface water/groundwater interactions, and rates of inelastic land subsidence. These potential impacts could extend beyond the SCF Partners’ service areas.”



EA/FONSI at p. 28.<sup>2</sup> However, the draft EA asserts that “the Glenn County Groundwater Management Plan provides the management and institutional framework for assessing and managing these potential impacts, and is incorporated in this plan by reference.” *Id.*; *see also* EA/FONSI at p. 2 (asserting that the Glenn County Groundwater Management Plan will “ensure that the proposed action will not result in any significant adverse effect to existing groundwater levels”).

But the Glenn County Groundwater Management Plan (adopted in August 2001) on which the EA relies concludes with the caution that “[s]ince the groundwater management plan is relatively new and not fully implemented, the enforcement and conflict resolution process has not been vigorously tested.” Moreover, the Glenn County Groundwater Management Plan does not have any provisions to monitor or protect the environment. The EA fails to explain why this management plan is deemed adequate to monitor the effects of the Project.

b. Monitoring based on the Glenn County Groundwater Management Plan is inadequate. The Bureau explains that the existing Glenn County groundwater management plan will ensure the testing project will have no significant adverse effects on groundwater levels: “This Finding of No Significant Impact (FONSI) is based upon the following: ... Implementation of the Glenn County Groundwater Management Plan during the aquifer performance testing plan will ensure that the proposed action will not result in any significant adverse effect to existing groundwater levels.” EA/FONSI at p. 2.

1-6

But the Butte County Department of Water and Resource Conservation explains that local plans are simply not up to the task of managing a regional resource:

Glenn County does not have an export ordinance because it relies on Basin Management Objectives (BMO) to manage the groundwater resource, and subsequently to protect third parties from transfer related impacts. Recently, Butte County also adopted a BMO type of groundwater management ordinance. Butte County, Tehama County and several irrigation districts in each of the four counties have adopted AB3030 groundwater management plans. All of these groundwater management activities were initiated prior to recognizing that a regional aquifer system exists that extends over more than one county and that certain activities in one county could adversely impact another. Clearly the current ordinances, AB3030 plans, and local BMO activities, which were intended for localized groundwater management, are not well suited for management of a regional groundwater resource like that theorized of the Lower Tuscan aquifer system.

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<sup>2</sup> As discussed in detail below, the current Project is one component of a larger Stony Creek Fan Conjunctive Water Management Program that anticipates the development of conjunctive use systems.



(Butte County DWRC 2007).<sup>3</sup>

c. The EA's proposed real time monitoring is also inadequate. The Bureau asserts that subsidence associated with groundwater extractions will be monitored in real time, but fails to address the delayed subsidence that may occur and that requires monitoring. The draft EA/FONSI relies on the placement of eight extensometers in the Sacramento Valley that measure land subsidence, and a Global Positioning System land subsidence network established by several counties. EA/FONSI at p. 28. The Bureau proposed to review this subsidence data "to identify any changes that occur during the test pumping, and to determine if there is any causal connection." *Id.*

1-7

However, delayed subsidence should also be monitored according to the findings of Dr. Kyran Mish, Presidential Professor, School of Civil Engineering and Environmental Science. Dr. Mish notes: "It is important to understand that *all* pumping operations have the potential to produce such settlement, and when it occurs with a settlement magnitude sufficient enough for us to notice at the surface, we call it *subsidence*, and we recognize that it is a serious problem (since such settlements can wreak havoc on roads, rivers, canals, pipelines, and other critical infrastructure)." (Mish 2008). Dr. Mish further explains that "[b]ecause the clay soils that tend to contribute the most to ground settlement are highly impermeable, their subsidence behavior can continue well into the future, as the rate at which they settle is governed by their low permeability." *Id.* "Thus simple real-time monitoring of ground settlement can be viewed as an *unconservative* measure of the potential for subsidence, as it will generally tend to underestimate the long-term settlement of the ground surface." *Id.* (emphasis added).

d. The Project fails to include any stream flow monitoring. It is clear from existing scientific studies that the Project may have significant impacts on the replenishment and recharging of the aquifers, and the Project should therefore include monitoring of these stream flows.

1-8

The Butte County Department of Water and Resource Conservation has identified streams that must be monitored to determine impacts to stream flows associated with the Lower Tuscan Aquifer. These streams identified as "[s]treams of interest" are located on the eastern edge of the Sacramento Valley and include: Mill Creek, Deer Creek, Big Chico Creek, Butte Creek, and Little Dry Creek. (The Butte County DWRC 2007). The organization describes the need and methodology for stream flow gaging:

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<sup>3</sup> We also note that the Bureau proposes the wells would begin operating on or about May 1, with "water developed from the wells [to] be used on lands located within the SCF Partners' respective areas." EA/FONSI at p. 14. However, DWR has stated a preference for testing during the non-irrigation season to avoid interference resulting from non-participant irrigation pumping. (McManus 2007). This conflict clearly needs to be resolved before the Project is implemented.

The objective of the stream flow gaging is to determine the volume of surface water entering into or exiting the Lower Tuscan Aquifer along perennial streams that transect the aquifer formation outcropping for characterization of stream-aquifer interactions and monitoring of riparian habitat. Measurement of water movement into or out of the aquifer will allow for testing of the accuracy of the Integrated Water Flow Model, an integrated surface water-groundwater finite differential model developed for the eastern extent of the Lower Tuscan aquifer.

Two stream gages will be installed on each of five perennial streams crossing the Lower Tuscan Formation to establish baseline stream flow and infiltration information. The differences between stream flow measurements taking upstream and downstream of the Lower Tuscan Formation are indications of the stream-aquifer behavior. Losses or gains in stream volume can indicate aquifer recharge or discharge to or from the surface waters.

*Id.*

Monitoring of flow on streams associated with the Lower Tuscan Formation is particularly important to the survival of Chinook salmon. However, as evident in the following conclusory assertions, the draft EA/FONSI narrowly defines the radius of influence associated with the aquifer testing and thus entirely fails to identify potential significant impacts to salmon:

“Biological Resources- The proposed action will not result in any physical changes to the environment resulting in significant adverse impacts to biological resources.” (EA/FONSI at p. 3)

“The installation of test holes, production wells and the subsequent pumping and conveyance of groundwater would not affect aquatic species and/or their habitat. Habitat for ... Chinook salmon (spring and winter run), central valley steelhead, or green sturgeon would not be affected, because no construction or flow modifications are proposed on natural waterways.” (EA/FONSI at p. 34).

But dewatering of salmon bearing streams that interface with the targeted Lower Tuscan Formation Aquifer would result in physical changes to these streams that may result in significant adverse impacts to biological resources. This effect has been observed in the Cosumnes River, where “[d]eclining fall flows are limiting the ability of the Cosumnes River to support large fall runs of Chinook salmon.” This is a river that historically supported a large fall run of Chinook Salmon. *Id.* Indeed, “[a]n early study by the California Department of Fish and Game . . . estimated that the river could support up to 17,000 returning salmon under suitable flow conditions.” *Id.*, citing CDFG 1957 & USFWS 1995. But “[o]ver the past 40 years fall runs ranged from 0 to 5,000 fish according to fish counts by the CDFG (USFWS 1995),” and “[i]n recent years, estimated fall runs have consistently been below 600 fish, according to Keith Whitener.” (Fleckenstein, *et al.* 2004). Indeed, “[f]all flows in the Cosumnes have been so low in

recent years that the entire lower river has frequently been completely dry throughout most of the salmon migration period (October to December).” *Id.*

Research indicates that “groundwater overdraft in the basin has converted the [Cosumnes River] to a predominantly losing stream, practically eliminating base flows....” (Fleckenstein, *et al.* 2004). And “investigations of stream-aquifer interactions along the lower Cosumnes River suggest that loss of base flow support as a result of groundwater overdraft is at least partly responsible for the decline in fall flows.” *Id.* Increased groundwater withdrawals in the Sacramento basin since the 1950s have substantially lowered groundwater levels throughout the county.” *Id.*

The draft EA/FONSI fails to anticipate possible stream flow declines in important Salmon rearing habitat located near the project. Mud Creek is located directly east of the Project and flows through probable Tuscan recharge zones. While a charged aquifer is likely to add to base flow of this stream, a de-watered aquifer would pull water from the stream. According to research conducted by Dr. Paul Maslin, Mud Creek provides advantageous rearing habitat for out-migrating Chinook salmon. (Maslin 1996). Salmon fry feeding in Mud Creek grew at over twice the rate by length as did fry feeding in the main stem of the Sacramento River. *Id.* The Bureau should not overlook the importance of rearing streams, and should not proceed with this Project unless and until adequate monitoring protocols are established.

**3. The EA fails to address the significant unknown risks raised by the Project’s proposed groundwater extraction.**

1-9

The EA fails to identify and address the significant unknown risks associated with this Project. There are substantial gaps in scientists’ understanding of how the aquifer system recharges.

While the EA asserts that the Lower Tuscan is an isolated layer in the aquifer, expert opinion and experience suggest otherwise. Professor Karin Hoover, Assistant Professor of hydrology, hydrogeology, and surficial processes from CSU Chico, asserts that to the best of her knowledge: “[T]o date there exists no detailed hydrostratigraphic analysis capable of distinguishing the permeable (water-bearing) units from the less permeable units within the subsurface of the Northern Sacramento Valley. In essence, the thickness and extent of the water-bearing units has not been adequately characterized. Neither the diagram supplied by the Department of Water Resources (DWR) in Technical Memorandum 3 (Davids Engineering, Inc., 2006; Figure 3), nor the description of the stratigraphic layers in Bulletin 118 (DWR, 2003) are sufficient to characterize the geometric complexity of the permeable, water-bearing units or the less permeable, confining units.”

There is also limited understanding of the interaction between the affected aquifers, and how that interaction will affect the ability of the aquifers to recharge. The EA provides:

The Pliocene Tuscan Formation lies beneath the Tehama Formation in places in the eastern portion of the SCF Program Study Area, although its extent is not well defined. Based on best available information, it is believed to occur at depths ranging between approximately 300 and 1,000 feet below ground surface. It is thought to extend and slope upward toward the east and north, and to outcrop in the Sierra Nevada foothills. The Tuscan Formation is comprised of four distinct units: A, B C and D (although Unit D is not present within the general project area). Unit A, or *Upper Tuscan Formation*, is composed of mudflow deposits with very low permeability and therefore is not important as a water source. Units B and C together are referred to as the Lower Tuscan Formation. Very few wells penetrate the Lower Tuscan Formation within the SCF Program study area.

EA/FONSI at p. 23 (emphasis added). The Tehama Formation, however, generally behaves as a semi-confined aquifer system and the EA contains no discussion of its relationship with the adjoining formations. Nor is there any discussion of the role of the Pliocene Tehama Formation as “the primary source of groundwater produced in the area.” (DWR 2003). .

The EA fails to offer any in-depth analysis of which strata in the aquifer are likely to be affected by the Project’s proposed extraction of groundwater. The EA states generally that that “[g]roundwater occurs in varying degrees of confinement, typically behaving as unconfined conditions in the alluvial deposits and becoming partially confined at greater depths.” EA/FONSI at p. 23. However, other than recognizing that the Upper Tuscan Formation is “not important as a water source,” the EA provides no assessment of how the proposed extraction will affect the underlying aquifers.

Because the Project is described as a “research” endeavor, it is also important to note that the Project contains no plan to examine and identify the full extent of the Lower Tuscan Formation or the recharge area. According to Butte County Department of Water and Resource Conservation, a Tuscan Recharge Assessment would include assessment of Tuscan outcroppings for direct recharge potential, field infiltration tests to quantify the recharge potential of soil types within the Lower Tuscan Formation outcropping, determination of the volume of surface water entering into or exiting the Lower Tuscan Aquifer along perennial streams that transect the aquifer formation outcropping for characterization of stream-aquifer interactions, and measurement of stream-aquifer temperature gradients to determine how groundwater is influenced by the influx of surface waters to the aquifer or the movement of aquifer water toward the ground surface, determination of the direction of water movement. (Butte County DWRC 2007).<sup>4</sup>

**B. The significant environmental effects of the Project are controversial.**

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<sup>4</sup> Because the draft EA/FONSI does not assess the relationship of the affected formations, there is also no discussion of whether the increased groundwater extraction proposed by the Project may mobilize some of the PCE and TCE plumes under Chico. This is just another example of the issues that should be considered and evaluated in an EIS.

As demonstrated above, the Bureau has failed to acknowledge or address significant scientific research that is contrary to its conclusory assertion that the Project will not have significant environmental impact. This renders the Project “controversial” within the meaning of the NEPA regulations, and is a further reason that an EIS should be prepared. See *Greenpeace Action v. Franklin*, 14 F.3d 1324, 1335 (9th Cir. 1993) (effects are “controversial” where there is “a substantial dispute [about] the size, nature, or effect of the major Federal action rather than the existence of opposition to a use”); *Sierra Club v. United States Forest Service*, 843 F.2d 1190 (9th Cir. 1988) (action was “controversial” where Sierra Club produced evidence from experts showing EA’s inadequacies and casting doubts on agency’s conclusions).

**C. The Project is likely to have a cumulatively significant impact on the environment.**

1-11

As depicted in the draft EA/FONSI, the Project will last only two years and will install seven new production wells into the deep portions of the aquifer underlying Butte, Glenn, and Tehama Counties to test their capacity to provide groundwater, to help identify the properties of the aquifer surrounding the production wells, and to provide information about the “regional interaction between the shallower and deeper aquifer system.” EA/FONSI at p.5.

However, what the draft EA/FONSI does not reveal is that the current Project is part of a much larger set of plans to develop groundwater in the region, to develop a “conjunctive” system for the region, and to place GCID in a position to integrate its water supply into the state water supply. These are plans that the Bureau, together with GCID, DWR and others, have been pursuing and developing for many years. Indeed, one of the plans – the short-term phase of the Sacramento Valley Water Management Program – is the subject of an ongoing scoping process for a Programmatic EIS that has not yet been completed (see footnote 1 above).

In assessing the significance of a project’s impact, the Bureau must consider “[c]umulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement.” 40 C.F.R. §1508.25(a)(2). A “cumulative impact” includes “the impact on the environment which results from the incremental impact of the action when added to *other past, present and reasonably foreseeable future actions* regardless of what agency (Federal or non-Federal) or person undertakes such other actions.” *Id.* §1508.7. The regulations warn that “[s]ignificance cannot be avoided by terming an action temporary or by breaking it down into small component parts.” *Id.* §1508.27(b)(7).

An environmental impact statement should also consider “[c]onnected actions.” *Id.* §1508.25(a)(1). Actions are connected where they “[a]re interdependent parts of a larger action and depend on the larger action for their justification.” *Id.* §1508.25(a)(1)(iii). Further, an environmental impact statement should consider “[s]imilar actions, which when viewed together with other *reasonably foreseeable or*

*proposed agency actions*, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography.” *Id.* §1508.25(a)(3).

Here, as detailed below, instead of assessing the cumulative impacts of the proposed action as part of the larger program that even the Bureau has recognized should be subject to a programmatic EIS (but for which no programmatic EIS has been completed), the Bureau has attempted to break this program into component parts and approve it through an inadequate EA. Further, the Bureau has failed to take into account the cumulative effects of other groundwater and surface water projects in the region, the development of “conjunctive” water systems, and the anticipated integration of GCID’s water into the state water system.

**1. The Bureau May Not Avoid Consideration of the Significant Environmental Impacts By Improperly Segmenting the Proposed Activities**

1-12

The EA briefly mentions that the Project is part of the Stony Creek Fan Conjunctive Water Management Program. EA/FONSI at p. 2. However, it fails to adequately describe that Program and how the Project relates to the Program, and further fails to describe the numerous other programs of which this Project is a small component part. It is clear that that this Project is an “interdependent part[] of a larger action,” and that it “depend[s] on the larger action for [its] justification.” 40 C.F.R. §1508.25(a)(1)(iii). This is exactly the sort of segmentation that NEPA prohibits. Instead, NEPA requires that “[p]roposals or parts of proposals which are related to each other closely enough to be, in effect, a single course of action shall be evaluated in a single impact statement.” *Id.* §1502.4.

GCID is party to numerous current and reasonably foreseeable water programs that are related to the SCF Aquifer Plan, including the following:

- Sacramento Valley Integrated Regional Water Management Plan (2006)
- Sacramento Valley Regional Water Management Plan (January 2006)
- Stony Creek Fan Conjunctive Water Management Program
- Sacramento Valley Water Management Agreement (Phase 8, October 2001)
- Draft Initial Study for 2008-2009 Glenn-Colusa Irrigation District Landowner Groundwater Well Program
- Regional Integration of the Lower Tuscan Groundwater Formation into the Sacramento Valley Surface Water System Through Conjunctive Water Management (June 2005).

Excerpts of these programs are provided as attachments, and we briefly describe some of their key elements here. (Note: in some cases, referenced attachments will be submitted under separate cover.)

Stony Creek Fan Conjunctive Water Management Program. The SCF Aquifer Plan is part of and in furtherance of the Stony Creek Fan Conjunctive Water Management Program (“SCF Program”). This program is being carried out by GCID, Orland-Artois and Orland Unit Water Association.

The long-term objective of the SCF Program is the development of a “regional conjunctive water management program consisting of a direct and in-lieu recharge component, a groundwater production component, and supporting elements....” (SVWMA: Project 8A Stony Creek Fan Conjunctive Water Management Plan (“SVWMA Project 8A”), at 8A-1). The potential supply from such a program was estimated at 50,000 af per year to 100,000 af per year. *Id.*

The SCF Program has 3 Phases: (1) a feasibility study; (2) a demonstration project; and (3) project implementation. Phase I of the SCF Program has already been completed. The SCF Aquifer Plan described in the draft EA/FONSI is part of Phase II of the larger SCF Program. Phase III of the SCF Program will implement the program’s goal of integrating test and operational production wells into the water supply systems for GCID, Orland-Artois, and Orland Unit Water Association for long-term groundwater production in conjunction with surface water diversions.

The Bureau is well aware of the SCF Program, and should have analyzed the environmental effects of the program as a whole, and not simply considered the effects of an isolated component of the larger program. Indeed, the Bureau recently awarded a grant to GCID to fund the SCF Program. The Bureau’s grant agreement states that the SCF Program “target[s] the Lower Tuscan Formation and possibly other deep aquifers in the west-central portion of the Sacramento Valley ... as the source for all or a portion of the additional groundwater production needed to meet [the SCF Partners’] respective integrated water management objectives.” BOR Assistance Agreement No. 06FG202103 at p. 2. The agreement further provides that “[a]dditional test wells and production wells will be installed within the Project Area.” *Id.*

Moreover, the Bureau’s own description of the reasons for not choosing the “No Action” alternative indicate the Bureau’s recognition that the primary goal of the SCF Aquifer Plan is to realize the objectives of the SCF Program – “increas[ing] reliable water supplies through conjunctive management of groundwater and surface water” at a fast pace. *See* EA/FONSI at p. 5. The Bureau was obligated to assess the potentially significant environmental impacts associated with such conjunctive management of groundwater and surface water, and wholly failed to do so.

There are serious concerns raised by the proposal to engage in conjunctive management of groundwater and surface water that are not addressed in the EA. For example, in 1994, following seven years of low annual precipitation, Western Canal Water District and other irrigation districts in Butte, Glenn and Colusa counties exported 105,000 af of water extracted from the Tuscan aquifers to buyers outside of the area. This early experiment in the *conjunctive use* of the groundwater resources – conducted without the benefit of environmental review – caused a significant and immediate adverse



impact on the environment. (Msangi 2006). Until the time of the water transfers, groundwater levels had dropped but the aquifers had sustained the normal demands of domestic and agricultural users. The water districts' extractions, however, lowered groundwater levels throughout the Durham and Cherokee areas of eastern Butte County. (Msangi 2006). The water level fell and the water quality deteriorated in the wells serving the City of Durham. (Scalmanini 1995). Irrigation wells failed on several orchards in the Durham area. One farm never recovered from the loss of its crop and later entered into bankruptcy. Residential wells dried up in the upper-gradient areas of the aquifers as far north as Durham (.

The SCF Program is a Component of the Sacramento Valley Water Management Program. The Sacramento Valley Water Management Program (Phase 8) ("SVWMP") also includes the SCF Program as one of its elements. (SVWMA Project 8A at pp. 8A-1 to 8A-13).

The SVWMP recognizes that the SCF Program "has the potential to improve operational flexibility on a regional basis resulting in measurable benefits locally in the form of predictable, sustainable supplies, *and improved reliability for water users' elsewhere in the state.*" *Id.* at p. 8A-2 (emphasis added). By piecemealing this program improperly and analyzing only the small component of the SCF Program, the Bureau has failed to assess the environmental impacts associated not just with the anticipated conjunctive use of the groundwater, but also the effect of the anticipated export of water to other regions of the state.

Additionally, approximately five years ago, on August 5, 2003, the Bureau published a notice in the Federal Register announcing its intention to prepare a programmatic EIS to analyze the short-term phase of the SVWMP. 68 Fed. Reg. 46218, 46219 (Aug. 5, 2003). Like the SVWMP, this "Short-term Program" for which the Bureau stated its intent to conduct a programmatic EIS included implementation of the SCF Program. *Id.* at 46219, 46220.

The SCF Program is Also a Component of the Sacramento Valley Integrated Regional Water Management Program. The Bureau has been working with GCID and others to realize the Sacramento Valley Integrated Regional Water Management Program ("SVIRWMP"). SVIRWMP is comprised of a number of sub-regional projects, including the SCF Program. *See* SVIRWMP, Appendix A at A-5; BOR Assistance Agreement No. 06FG202103. Here again, even though the SCF Aquifer Plan is clearly a necessary component of the SCF Program – which is in turn a component of the SVIRWMP – the draft EA/FONSI fails to even acknowledge, let alone assess, the cumulative impacts of these related projects.

## **2. The Bureau Has Failed to Consider the Cumulative Impact of Other Groundwater Development and Surface Water Diversions Affecting the Region**

1-13

In addition to the improper segmentation evident in the draft EA/FONSI, the assessment of environmental impacts is further deficient because the Bureau has failed to consider the cumulative impacts of the proposed groundwater extraction when taken in conjunction with other projects proposed for the development of groundwater and surface water.

Most obviously, the draft EA/FONSI wholly fails to assess the impact of GCID's currently proposed Landowner Groundwater Well Program for 2008-09. In this program, GCID proposes to divert groundwater pumped from private wells to agricultural interests in the District. *See* Attach. \_\_ (GCID Proposed Negative Declaration, GCID Landowner Groundwater Well Program for 2008-09). GCID argues that it may not have "adequate surface water supplies to meet irrigation demands from November 1, 2008 – October 31, 2009 due to existing and anticipated drought conditions," and that it will need up to 160,000 af of groundwater to meet anticipated shortages.

In that program, GCID contends that, in "non-critical water years," GCID recharges 180,000 af to the aquifer system and therefore, that any groundwater pumped this year will be recharged "during the next year that GCID receives 100% of its surface water supplies." *Id.* at 2. GCID asserts that it receives 100% of surface water supplies "in nine of every ten years." *Id.* Given the concerns with the decrease in surface water supplies described below, this assertion is certainly suspect. In any event, the cumulative impact of GCID's plans to extract significant amounts of groundwater from the aquifer at the same time that it is proposing to install "test" production wells (that are the precursor to additional groundwater extraction) must be considered and analyzed in an EIS.

Additionally, the draft EA/FONSI does not consider the cumulative effect of the Lower Tuscan Integrated Planning Program, a program funded by the Bureau that will "integrate the Lower Tuscan formation aquifer system into the management of regional water supplies." Grant Agreement at 4. This program, as described by the Bureau, will culminate in the presentation of a proposed water management program for the Lower Tuscan Formation for approval and implementation by the appropriate authorities. Clearly, the cumulative impact of this program and the Project's proposed groundwater extraction should have been assessed.

Finally, the draft EA/FONSI does not assess the impact that potential transfers of GCID's surface water will have when taken in conjunction with the SCF Aquifer Plan and the SCF Program. GCID historically has entered into so-called "forebearance" and "option" agreements that provide for the diversion of surface water for the District. For example, BEC understands that GCID has entered "forebearance agreements" to provide substantial amounts of water to the San Luis and Delta Mendota Water Association in 2008, 80,000 af to State Water Project contractors in 2005, and 60,000 af to the Metropolitan Water District of Southern California in 2003. Similarly, BEC understands GCID to have transferred significant amounts of base water to agricultural lands outside but contiguous to the district from 1999 to 2003. Just this year, GCID proposed diverting approximately 85,000 af. Although GCID has not followed through with that particular transfer, the Project contains no guarantee that such transfers will not occur – nor does

the draft EA/FONSI include any analysis of the cumulative environmental effects of the groundwater drilling and such transfers of surface water.

**D. The Project is likely to serve as precedent for future actions with significant environmental effects.**

1-14

As set forth above, this Project is part of a broader effort by GCID to develop groundwater resources and to integrate GCID's water into the state system. For these reasons, the Project is likely to "establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration" (40 C.F.R. §1508.27(b)(6)), and should be analyzed in an EIS.

**E. The Project has potential adverse impacts for a threatened species.**

1-15

The Bureau should also prepare an EIS because the Project will likely have significant environmental effects on the Giant Garter Snake (*Thamnophis gigas*), a listed threatened species under the federal Endangered Species Act and California Endangered Species Act. 40 C.F.R. §1508.27(b)(9).

Flooded rice fields and irrigation canals in the Sacramento Valley can be used by the giant garter snake for foraging, cover and dispersal purposes. The draft EA/FONSI fails to comprehensively analyze the movements and habitat requirements for the federal and state-threatened giant garter snake. The snake gives birth from July to September, months that the Project would be implemented.

The Project fails to include sufficient safeguards to protect the giant garter snake and its habitat. In order to avoid potentially significant adverse impacts for the snake, additional surveys should be conducted prior to any alteration in water regime or landscape.

Further, the assertion in the draft EA/FONSI that "the proposed Project would have a less-than-significant impact to the giant garter snake within the existing farmlands due to a short-term decrease in potential cover and foraging areas for this species" is without any apparent scientific basis. EA/FONSI at p. 17. This conclusory assertion certainly does not constitute a sufficient analysis of the potential impact of the Project on this endangered species. At a minimum, such conclusions rely on an improperly segmented and overly narrow view of the proposed action which does not consider the larger project as described above nor the cumulative impacts as described above.

**II. The Environmental Assessment Fails to Meet the Requirements of NEPA.**

1-16

Even if an EIS were not clearly required here, the draft EA prepared by the Bureau violates NEPA on its own. The draft EA does not offer any alternatives other than a "no action" alternative. The draft EA does not provide the analysis necessary to meet NEPA's requirements and to support its proposed finding of no significant impact. Further, as outlined above, the draft document fails to provide a full and accurate

description of the proposed Project, its relationship to the SCF Program, and an assessment of the cumulative environmental impacts of the Project when considered together with other existing and proposed water programs.

Additionally, the draft EA/FONSI fails to provide sufficient evidence to support its assertions of “no impact,” which in turn means that the public is unable fully to evaluate the significance of the Project’s impacts. These informational failures complicate BEC’s efforts to provide meaningful comments on the full extent of the potential environmental impacts of the SCF Aquifer Plan and appropriate mitigation measures. Accordingly, many of BEC’s comments include requests for additional information.

**A. The EA Fails to Consider a Reasonable Range of Alternatives.**

**1-17**

NEPA’s implementing regulations call analysis of alternatives “the heart of the environmental impact statement,” 40 C.F.R. §1502.14, and they require an analysis of alternatives within an EA. *Id.* §1408.9. The statute itself specifically requires federal agencies to:

study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning available uses of resources.

42 U.S.C. §4332(2)(E). Here, because the Bureau’s EA considers only the proposed Project and a “No Action” alternative, the EA violates NEPA.

The case law makes clear that an adequate analysis of alternatives is an essential element of an EA, and is designed to allow the decisionmaker and the public to compare the environmental consequences of the proposed action with the environmental effects of other options for accomplishing the agency’s purpose. The Ninth Circuit has explained that “[i]nformed and meaningful consideration of alternatives ... is ... an integral part of the statutory scheme.” *Bob Marshall Alliance v. Hodel*, 852 F.2d 1223, 1228 (9th Cir. 1988) (holding that EA was flawed where it failed adequately to consider alternatives). An EA must consider a reasonable range of alternatives, and courts have not hesitated to overturn EAs that omit consideration of a reasonable and feasible alternative. *See People ex rel. Van de Kamp v. Marsh*, 687 F.Supp. 495, 499 (N.D. Cal. 1988); *Sierra Club v. Watkins*, 808 F.Supp. 852, 870-75 (D.D.C. 1991).

Here, there are only two alternatives presented: the No Action and the Proposed Action. The lack of *any* alternative action proposal is unreasonable and is by itself a violation of NEPA’s requirement to consider a reasonable range of alternatives.

Perhaps even more significantly, there are numerous other methods of achieving the Project’s purported goal of “better defin[ing] the physical and operational characteristics of [the regional aquifer] systems, and to better understand the potential effects of ongoing and potential future groundwater development.” EA/FONSI at p. 1.

These are the alternatives that should have been presented in compliance with NEPA. 42 U.S.C. § 4332(2)(E).

For example, an alternative to drilling new wells for monitoring would be to use existing monitoring and/or production wells to conduct studies of the aquifer. Other alternatives might include combine increased and more accurate monitoring of the effects of the test wells with an assessment of the monitoring results before drilling and use of the proposed production wells. For example, monitoring should be conducted in areas beyond the proposed 3-5 mile radius around the production wells, delayed monitoring techniques should be used, and monitoring of stream flow should be incorporated in the Program.<sup>5</sup>

**B. The EA Fails to Disclose and Analyze Adequately the Environmental Impacts of the Proposed Action**

1-18

The discussion and analysis of environmental impacts contained in the EA is cursory and falls short of NEPA's requirements. NEPA's implementing regulations require that an EA "provide sufficient evidence and analysis for determining whether to prepare an [EIS]." 40 C.F.R. §1508.9(a). For the reasons discussed above, the EA fails to discuss and analyze the environmental effects of the test and production wells proposed by the Project. The Bureau must consider and address the myriad of environmental consequences that are likely to flow from this proposed agency action.

We identify some examples of the EA/FONSI's inadequate discussion of environmental impacts below. However, there are numerous other illustrations of the Bureau's cursory analysis of the Project's environmental impacts, including the document's discussion of effects on land use, air quality, and environmental justice issues. For example, there is no discussion of how the contemplated increased use of groundwater would affect agricultural crops and residential communities that rely on groundwater. Nor is there any discussion of the effects of the Project on air quality should the production wells continue in production beyond the asserted timeline of the Project. Indeed, the EA/FONSI wholly fails to consider long-term impacts of the Project in the event that – as reflected in the numerous groundwater development plans discussed above – GCID decides to operate the production wells beyond the stated 2-year term of the Project and to drill many more production wells. These are likely and foreseeable developments that the Bureau should have addressed in its EA/FONSI.

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<sup>5</sup> Of course, if the real goal of the Project is to develop "water supplies through conjunctive management of groundwater and surface water" at a face pace, as suggested by the draft EA/FONSI's description of the "No Action" alternative (EA/FONSI at p. 5), then alternatives that do not involve production wells and significant extraction may not satisfy that goal. However, as we demonstrate, the Bureau has failed to engage in any analysis of the environmental effects of such a conjunctive management system.

**1. The EA concedes that there may be significant impacts associated with the Project but fails to demonstrate how those impacts will be avoided.**

1-19

The draft EA/FONSI provides:

Although the intent of the operational testing (Phase 3) is to produce measurable effects, the magnitude and duration of these effects would not be sufficient to cause adverse impacts or result in a serious or major disturbance to groundwater resources. If water monitoring indicates a significant decline in groundwater levels in the relevant vicinity of the test pumps, and that any such decline is not directly attributable to a cause other than the proposed action, then the test pumping would be modified or terminated as necessary to avoid any significant adverse impacts.

EA/FONSI at pp. 27-28.

Putting aside the significant concerns about the adequacy of the proposed monitoring, the draft EA/FONSI fails to explain what standards will be used to evaluate the monitoring data, and on what basis a decision to “modif[y] or “terminate[]” the pumping would be made. In light of the document’s silence on these crucial issues, the draft EA’s conclusion that there will not be significant adverse impacts does not withstand scrutiny.

**2. The EA does not provide sufficient evidence to support its conclusion that the Project will not have significant hydrological impacts.**

1-20

The EA’s discussion of the Project’s environmental consequences for groundwater and geological resources describes the estimated volumes of groundwater that would be extracted, and the “effects of the proposed test pumping on the SCF Partner’s [sic] surface water resources.” EA/FONSI at p. 26. However, the EA contains only minimal discussion of the effects of the proposed extraction on the *groundwater* resources of the region. *See id.* at pp. 27-28.

The EA’s only discussion of potential effects on groundwater is found two statements. First, the document asserts that: “Although the intent of the operational testing (Phase 3) is to produce measurable effects, the magnitude and duration of these effects would not be sufficient to cause adverse impacts or result in a serious or major disturbance to groundwater resources.” EA/FONSI at p. 27.

In essence, therefore, the EA recognizes that there are anticipated negative effects on the groundwater resources, but concludes that the “magnitude and duration of these effects” would not cause significant adverse impacts. But the document provides no explanation of the “magnitude and duration” of the anticipated negative effects. Presumably, there is an expectation that groundwater levels will decrease. However,

there is no explanation of the amount by which the groundwater is expected to decrease, of what level of decrease is considered to be acceptable. Nor is there an explanation as to why the amount of water to be extracted is not considered significant. And while the EA describes existing observation wells that will be used to attempt to monitor these effects, nothing in the document states what will be considered an acceptable effect.

The second (and only other) statement in the EA that relates to the Project's effect on groundwater resources is: "Increased use of groundwater in Glenn County by the SCF Partners under future conjunctive use scenarios could potentially affect groundwater levels, water quality, surface water/groundwater interactions, and rates of inelastic land subsidence," effects that "could extend beyond the SCF Partners' service areas." EA/FONSI at p. 28. Here again, the document does not discuss or analyze these potential impacts, their potential scope or severity, or potential mitigation efforts. Instead, it relies on the existence of the Glenn County Groundwater Management Plan to suggest that any adverse environmental effects would be avoided. However, as we have shown above, that management plan is untested and does not provide adequate protection and monitoring of the region's important groundwater resources.

BEC is particularly concerned that the EA fails a reasoned analysis as to why the amount of groundwater extraction proposed in the Project is not significant. The Project proposes to extract a total of 26,530 af of groundwater in the course of a seven months of operation. This far exceeds the amount of groundwater utilized by the City of Chico in an equivalent period – 17,500 af of groundwater in seven months (based on an approximate annual use of 30,000 af). (Butte County Department & Resource Conservation 2003). This alone raises concerns about significant adverse environmental impacts. The California Water Service uses the Tuscan aquifer for its urban water supplies and, over the course of the past 57 years, that aquifer has experienced a water level decline of 40 feet. (Friend pp. 5-14). An additional 20-foot decline occurred during the multi-year drought in the early 1990s, which coincided with a significant increase in demand. *Id.* If the draw for urban water supplies alone is anticipated to decrease groundwater levels, it appears likely that the proposed extraction will have a significant impact.

Additionally, the EA does not explain why the Project's rate of groundwater extraction is not significant. The EA suggests that the cumulative effect of the proposed extraction from the test production wells will be insignificant because the proposed extraction of a total 26,530 af of groundwater constitutes only two percent of the "1,200,000 af of groundwater that is extracted from the Sacramento Valley portion of Butte, Colusa, Glenn and Tehama Counties during a normal water year." EA/FONSI at p. 29. However, there is no assessment of whether the current level of extraction is permitting the aquifers to re-charge.

1,200,000 af is a significant amount of groundwater. Indeed, given that the affected counties cover approximately 7,005 square miles, about half of which lie in the Valley, extraction of 1,200,000 af amounts to about 342 af per square mile in valley area of the four counties. In contrast, the designated test area for the Project is approximately 42 square miles; and extraction of the proposed 26,530 af from this test area averages out



to 632 af per square mile. Further, the extraction of 1,200,000 is an annual rate of extraction; the proposed extraction of 26,530 af is for a proposed period of six months. EA/FONSI at 14.

When the data are normalized for extent and duration, they compare as follows:

- The four counties extract at an approximate rate of 29 acre-feet/sq. mile/month.
- The Project test area will extract at an approximate rate of 88 acre-feet/sq. mile/month.

In other words, the test area will be extracting at rate of about *three* times that of the four counties area.

The EA also fails to provide a reasoned analysis of the anticipated recharge rate in the existing wells that utilize the Tuscan aquifer. As we discussed above, there may be significant environmental impacts if the Project results in groundwater being removed at a rate that exceeds the recharge rate.

The EA appears to recognize that there may be a drawdown effect on the aquifer, discussing results from a DWR Northern District spring 2007 production well test. EA/FONSI at 28. However, it does not assess the anticipated scope of that effect – or even what level of effect would be considered acceptable. Moreover, the results from that test well indicate that the recharge source for the well “is most likely from the foothills and mountains, to the east and north” – which at a minimum is more than fifteen miles away. (DWR, Glenn-Colusa Irrigation District Aquifer Performance Testing Glenn County, California). This would mean that the source water lies on the other side of the Sacramento River. Yet the EA relies on these tests to suggest that the “deep aquifer radius of influence” is between three and five miles. EA/FONSI at p. 28. This is yet another example of the way in which the EA’s discussion of the effects on groundwater resources is deficient.

Finally, the EA fails to provide a reasoned explanation of how the effects of the Project will be monitored. The draft asserts that DWR monitors 100 single and multi-completion wells “throughout the northern Sacramento Valley on a quarterly basis” (EA/FONSI at p. 28), and that the Project intends to use these wells to monitor the effects of the Project. However, it is unclear how often the wells will be used to monitor the effects of the Project, and thus what sort of data will be obtained through this monitoring: on the one hand, there is a suggestion that the monitoring is “quarterly,” on the other hand, the draft states that the wells will be used “whenever possible.” *Id.* Additionally, it is unclear how many and which wells will be used to monitor the Project – some of the wells are far beyond the radius of three to five miles identified by the EA as the area of affect, and some are located in areas beyond fifteen miles to the east and north of the production wells. The EA fails to provide a reasoned explanation of why the proposed monitoring will be effective at identifying the anticipated negative impacts of the proposed groundwater extraction.

**3. The EA does not provide sufficient evidence to support its conclusion that the Project will not have adverse impacts on species in the affected region.**

**1-21**

In addition to the potential effects on the Giant Garter Snake discussed above, the EA should address the Project's anticipated effect on the habitats of other specials with protected statuses, including: Swainson's hawk, the bank swallow, the greater sandhill crane, salmon, and bald eagles. In particular, the EA fails to identify the presence of the greater sandhill crane, a state threatened species, in the Project area. The greater sandhill crane forages in the Project area. The EA does not include the multi-season biological surveys for the area affected by the anticipated draw-down and other likely effects from the proposed groundwater extraction. Nor does it include a management plan for the special status species with habitat in the Project area.

**4. The EA fails adequately to assess the effect of the Project on the use of surface water.**

**1-22**

The EA suggests that the Project will have no adverse impacts on land management, agricultural practices, or surface water resources. However, this is simply because the Project anticipates that surface water will be augmented with groundwater. EA/FONSI at p. 2. But extracting water from areas of origin for Central Valley Project and State Water Project agricultural and urban contractors is not encouraging the CVP and the SWP to begin working within the limited means of California's water supplies. The current efforts to correct years of mismanagement of California's water and the impacts on countless aquatic and terrestrial species, have forced the state to confront the maelstrom from competing interests vying for an ever, smaller piece of the water pie.

**C. The EA Fails to Analyze Cumulative Impacts Adequately.**

**1-23**

The Ninth Circuit has made clear that NEPA mandates "a useful analysis of the cumulative impacts of past, present and future projects." *Muckleshoot Indian Tribe v. U.S. Forest Service*, 177 F.3d 800, 810 (9th Cir. 1999). Indeed, "[d]etail is required in describing the cumulative effects of a proposed action with other proposed actions." *Id.* The very cursory cumulative effects discussion contained in the EA plainly fails to meet this standard.

As discussed in Part I.C. above, the proposed SCF aquifer drilling does not exist in a vacuum, and instead are actually integrated parts of a broader program to develop regional groundwater resources and a conjunctive use system. The Project is also only one of several proposed and existing projects that affect the regional aquifers. The existence of these numerous related projects make an adequate analysis of cumulative impacts especially important.

**III. Conclusion**

The Project clearly has the potential to affect the environment, both within GCID and other areas overlying the common aquifer system (including Butte, Glenn, Colusa and Tehama Counties) as well as in the areas of conveyance and delivery. The Bureau's cursory treatment of these serious issues deprives decisionmakers and the public of the ability to evaluate the potential environmental effects of this Project.

The Bureau should complete the scoping process for the Programmatic EIS for the short-term phase of the Sacramento Valley Water Management Program. At a minimum, BEC requests that the Bureau prepare an EIS for the Project.

BEC also requests notification of any meetings that address this proposed Project or any other BOR projects in Butte, Colusa, Glenn, or Tehama counties that requires consideration of NEPA/CEQA. Please add BEC to your basic public notice list for projects in Butte, Colusa, Glenn, or Tehama counties and send any additional documents that pertain to this particular Project.

Sincerely,

A handwritten signature in black ink, appearing to read "B. Vlamis". The signature is fluid and cursive, with a long horizontal stroke at the end.

Barbara Vlamis  
Executive Director  
Butte Environmental Council

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September 5, 2008

Tamara LaFramboise  
Bureau of Reclamation  
2800 Cottage Way, MP-410  
Sacramento, CA 95825

Re: Draft Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for  
Stoney Creek Fan Aquifer Performance Testing Plan

Dear Ms. LaFramboise:

The City of Chico has the following comments on the EA for the above referenced project, which will explore the regional aquifer systems serving the greater Sacramento Valley:

- 1) The EA does not disclose that the current project is part of a much larger set of plans (noted below) to integrate ground water into the state water supply. The water purveyor partners for the testing program include the BOR (Bureau of Reclamation), DWR California Department of Water Resources), and GCID (Glen Colusa Irrigation District). The following is a list of plans that GCID is a party to that reveal the intention of the partnership maybe to utilize Sacramento Valley ground water as a water source for the state:

2-1

  - Sacramento Valley Water Management Agreement (Phase 8, October 2001)
  - Estimating the Potential for In Lieu Conjunctive Water Management in the Central Valley of California (2002)
  - Regional Integration of the Lower Tuscan Groundwater Formation into the Sacramento Valley Surface Water System Through Conjunctive Water Management (June 2005)
  - Sacramento Valley Regional Water Management Plan (January 2006)
  - Sacramento Valley Integrated Regional Water Management Plan (2006)

The FONSI should clarify the relationship between the testing project and these plans.

- 2) The EA fails to meaningfully evaluate cumulative impacts on the environment which may result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions," (40 C.F.R. § 1508.7). The EA fails to note all the projects planned by GCID and it's partners, including the relationship to the planning documents (listed above).

2-2



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- 3) The EA should evaluate if the test wells will be potentially turned into production wells and whether any potential regional impacts on groundwater depletion will result, particularly as it relates to the City of Chico's water supply. According to the California Water Service Urban Water Management Plan, the City of Chico's sole source of water supply is groundwater and the current and planned utilization is 29,897 acre feet per year (2005) and 54,938 acre feet per year (2030). Our understanding is that the groundwater used by the city is extracted from the same aquifer that will be the subject of the test project. The FONSI should evaluate what are the potential impacts to the city's groundwater supply today and in the future based on the anticipated testing. 2-3
- 4) The EA discusses the GCID spring 2007 production well test that produced approximately 433 acre feet of groundwater over 28 days. The EA indicates that the test demonstrated that, "Preliminary results from the test indicate that drawdown effects were evident in wells monitoring the deeper aquifer systems (approximately 650 feet to 1,000 feet below ground surface) at a distance of two miles, but were not evident in the next closest deep aquifer monitoring well at a distance of five miles. Thus, the deep aquifer radius of influence associated with the 2007 deep aquifer testing is estimated to be between three to five miles," (p. 28). Nonetheless, the draft DWR report, Glenn-Colusa Irrigation District Aquifer Performance Testing Glenn County, California mentioned in the EA indicates that isotopic data indicate that the recharge source for the test production well, "is most likely from the foothills and mountains, to the east and north," (p. 27), which is over fifteen miles away (triple the distance that is asserted in the EA). This apparent discrepancy should be resolved prior to adoption of the FONSI. 2-4

The City would appreciate a response to each of the comments prior to adoption of the FONSI.

Sincerely,



Steve Peterson  
Planning Services Director

cc: David Burkland, City Manager  
Mayor Andy Holcombe  
Mike Mares, California Water Service Company  
Tom Varga, CPD

FR: Chrono



*President*  
Bill Center

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Lynn Sadler  
Teresa Villegas  
Terry Watt  
Bill Yeates

September 5, 2008

Ms. Tamara LaFramboise  
Bureau of Reclamation  
2800 Cottage Way, MP-410  
Sacramento, CA 95825

RE: Glenn-Colusa Irrigation District Stony Creek Fan Aquifer Performance Testing Plan Draft  
Environmental Assessment and FONSI

Dear Ms. LaFramboise:

The Planning and Conservation League provides the following comments for consideration during the review of the Draft Environmental Assessment and Finding of No Significance for the Stony Creek Fan Aquifer Performance Testing Plan.

The following comments detail an assertion that the document is flawed because it provides a project description that disregards major aspects of the intended program, which the document references in sections outside of the project description component but not in the appropriate location. This inconsistency illuminates the incompleteness of the draft environmental documentation and suggests that further review and analysis is necessary before the NEPA process continues.

In addition, the document disregards the significant role that this project plays in the state's response to the current drought, which the Director of the Department of Water Resources publicly projected to continue through 2009. This "significance" is based on this proposed project's geographic location over the state's largest aquifer, availability of water for transfer and sale during dry years, the involvement of Glenn-Colusa Irrigation District in previous statewide drought responses, the recently proposed plans for a coordinated Drought Water Bank in 2009. Specifically, the proposed project increases the access to groundwater extraction in the northern Sacramento Valley. Long-term drought responses in the past have relied heavily on transfer of groundwater from northern California groundwater characteristic component of provided by the proposed action. This role further contributes to the cumulative effects of the proposed project and documentation should consider accordingly.

3-1

The following comments detail these general points.

Section 1.3. Purpose and Need

The expressed "purpose" of this proposed action is to expand existing knowledge and data of the hydrologic function of the regional aquifer system. The Planning and Conservation League supports this purpose as such understanding could improve the protection

3-2



1107 9th Street, Suite 360, Sacramento, CA 95814 Phone: 916-444-8726 Fax: 916-448-1789

Website: [www.pcl.org](http://www.pcl.org) Email: [pclmail@pcl.org](mailto:pclmail@pcl.org)

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of the upper Sacramento River system that serves as salmon habitat and avoid unintended overdraft and mismanagement.

However, this document evidences that data collection is not the single purpose of the proposed approach. Later references state that meeting drought water demand with groundwater extracted from the exploration wells is also an intended result of executing the proposed action.

3-3

In addition, federal assistance in aquifer analysis and profiling has always included the United State Geological Survey (USGS) as the advising federal agencies. It seems that if efficient exploration and documentation of groundwater characteristics is expected, USGS would be a collaborating agency. We request that GCID provides explanation of their absence from both the review of this documentation and the implementation of the proposal.

3-4

## Section 2. Proposed Action

The described proposed action does not encompass intended activities that will result from drilling of the seven groundwater wells in the Glenn-Colusa Irrigation District. In fact, the document does reference these missing activities – but not appropriately in the Section 2. Since these activities are not covered in Section 2, the significant impacts on the hydrologic conditions within the Lower Sacramento basin and throughout the statewide system associated with these activities have been left out of the printed analysis. In addition, the narrowness of the proposed action, given the omission of these project elements, undercuts the analysis of the cumulative impact of executing the well drilling project.

3-5

Specifically, the intended project in full, as intimated by references to future plans to use water produced by the proposed action to meet water needs caused by current drought conditions through transfer both within and outside the project boundary in this document, expands the scope of the project's area of influence. Generally, this documentation alleges a localized realm of influence on both the aquifer and the terrestrial environment. The level of impact will extend outside the Glenn-Colusa Irrigation District and throughout the State Water Project Delivery system, including the San-Joaquin/Sacramento Bay Delta ecosystem.

3-6

On page 22, the document asserts that "in the event that 2009 surface water supplies are limited due to dry hydrologic conditions, all the groundwater pumped by GCID and OUWUA for test purposes would be used to augment available surface water supplies...so groundwater pumped for test purposes would expand the total quantity of water provided by the district..." Not only should this condition be included in Section 2, it should be considered the hydrologic reality under which the proposed action will be executed, and not as a future uncertainty clause. The CA Department of Resources is already operating the statewide system under the assumption of a continued drought.

3-7

A second conditional clause on page 22 allows, "If GCID receives a 100% allocation from Reclamation, surface water not diverted by GCID would be available for diversion by other surface water users in the basin, or would contribute to Delta outflow, depending on flow timing." In fact, as the document goes on to allow, even under conditions 25% allocation reduction, GCID could use this groundwater to partially offset the shortage experienced under drought conditions. Again, these elements are part of the proposed action and should be included in Section 2.

3-8

For a complete analysis of the environmental impact resulting from the proposed Stony Creek Fan Aquifer Performance Plan, Section 2 should be rewritten to explicitly include these omitted elements meeting drought demand, coordination with State Drought Water Bank. If extraction of groundwater is not intended to provide drought relief in the Sacramento Valley or anywhere else in the state, the engineering design should be rewritten to demonstrate that extracted water would be restricted for monitoring purposes.

3-9

### Section 3.2.2. Environmental Consequences

"If monitoring indicates a significant decline in groundwater levels in the relevant vicinity of the test pumps, and that any such decline is not directly attributable to a cause other than the proposed action, then the test pumping would be modified or terminated as necessary to avoid any significant adverse impacts."

3-10

The proposed monitoring program leaves potential for direct impacts of the pumping project to be overlooked for two reasons: the design is only considering the possibility of localized impacts, and there isn't a well-defined outreach program to private well owners or upper Sacramento tributaries outside of the GCID service district.

3-11

The basin, underlying GCID, extends outside the boundaries of the district and the 2007 test production, referred to on page 25 of this document, actually produced evidence that the

3-12

sphere of influence from pumping within GCID extended beyond the eastern boundary of the district.

This proposed action should include a program to assess potential impacts of this action through the basin before certification of this process is considered.

We appreciate the work that you and your staff put into this NEPA documentation and your consideration of our comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Charlotte K. Hodde". The signature is fluid and cursive, with a large initial "C" and a distinct "K".

Charlotte Hodde  
Water Policy Analyst

September 5, 2008

Tamara LaFramboise  
US Bureau of Reclamation  
2800 Cottage Way  
Sacramento, CA 95825

RE: Glenn-Colusa Irrigation District Stony Creek Fan Aquifer Performance Testing Plan

Dear Ms. LaFramboise:

The League of Women Voters of Butte County completed our first two-year study of water resources in 1975-76. Our concerns with this plan are based on 33 years of learning about the groundwater basin that is the primary water source for more than 85% of our County population.

In recent years, we have learned that the Lower Tuscan aquifer, which was once believed to have ended at the Sacramento River, now underlies parts of five counties. We have learned that the recharge is believed to occur on the eastern edge of the valley in Tehama and Butte Counties. We have also come to know that almost nothing is known about the recharge mechanism, and that nothing at all is known about the rate of recharge.

The belief that recharge naturally follows pumping seems as naïve as the old statements preceding the dust bowl that “rain follows the plow.” There have already been two long-time experiments to test that hypothesis in our basin: Chico and Durham.

Chico (Cal Water) has conducted massive pumping just downstream of where the recharge is believed to occur on Big Chico Creek, and Durham is just downstream of the recharge area of Butte Creek. If recharge was going to naturally occur as a result of drawdown, there would not be permanent and expanding cones of depression under both communities which have joined together.

This document lacks any statement of what hypothesis is being tested. It appears to be a case of “let’s pump and see if any of the neighbors complain.” And while the ‘test wells’ are located over the Lower Tuscan formation under Glenn County, the map of the monitoring wells indicates that there are few monitoring wells located in the up-gradient portion of the aquifer, even though the document suggests that with greater pumping in the future there may be basin-scale and long-term effects.

It is inappropriate that your agency should finance 2% of the population in drawing a secondary source of water from what is the *primary* source for their neighbors, especially with so little protection for the environment and without consideration that those neighbors do not have surface water to use or to sell.

This project should be postponed until a qualified, independent science board is able to determine the following:

- 1) how the wells should be constructed in order to establish and ensure which aquifer is being drawn from;
- 2) how tests should be run to gain useful information and to identify what information needs to be sought; and
- 3) that a rigorous monitoring plan is in place to determine that no long-term harm is occurring to the aquifer.

When dealing with a natural system, especially a deep confined aquifer, there are too many unknowns and too many examples of heedless over-exploitation to be cavalier about pumping this resource to meet needs across the state.

Far more important, it seems to us, is protection of the overall system that produces 86% of the State’s water supply – and an essential part of that natural system is a healthy aquifer, connected to the streams that deliver clean water to the Delta.

Thank you for your consideration of our concerns.

Sharon Wallace, President  
League of Women Voters of Butte County

4-1

4-2

4-3

4-4

4-5

4-6

4-7



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

**REGION IX**

**75 Hawthorne Street**

**San Francisco, CA 94105-3901**

October 1, 2008

Tamara LaFramboise  
U.S. Bureau of Reclamation  
Mid-Pacific Region  
2800 Cottage Way, MP-410  
Sacramento, CA 95825

**Subject:** Draft Environmental Assessment and Finding of No Significant Impact,  
Glenn-Colusa Irrigation District, Stony Creek Fan Aquifer Performance  
Testing Plan

Dear Ms. LaFramboise:

The U.S. Environmental Protection Agency (EPA) has reviewed the document referenced above. Our review and comments are provided pursuant to the National Environmental Policy Act (NEPA), the Council on Environmental Quality's NEPA Regulations at 40 CFR 1500-1508, and our NEPA review authority under Section 309 of the Clean Air Act.

We are aware that the comment deadline date for the Draft Environmental Assessment (DEA) is past. We do not routinely examine EA's, however, we occasionally submit comments when there is a question regarding the appropriate level of NEPA documentation. We understand that questions about potentially significant impacts and NEPA compliance have been raised during the comment period. We have been informed that the Bureau of Reclamation (Bureau) is still reviewing comments received and may be willing to consider our late comments. We would appreciate your consideration of these late comments.

EPA has long been on record supporting comprehensive groundwater management and conjunctive use programs as an environmentally preferred approach to meeting California's significant water supply and water quality issues. At the same time, we recognize the significant legitimate concern of source regions regarding the potential impacts of these programs to local water resources. We believe it is important to implement groundwater management and conjunctive use programs only after a full evaluation and disclosure of the particular environmental and water resource implications of the program in the affected groundwater basins.

In this case, we have the following comments:

1. Our review of the DEA suggests some significant issues need to be addressed before an EA can be justified. Three major issues are: need for better information on groundwater supply monitoring and mitigation; consideration of potential groundwater quality impacts; and assurance that the project length is only three years and would not lead to longer term groundwater extraction without additional environmental review that has a regional, cumulative effects scope.

5-1

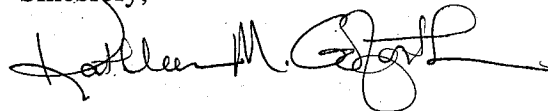
2. We are concerned that the many groundwater use and management activities in the Sacramento Basin could, in combination, have a range of impacts on water supplies and quality, and on other water-related resources. Piecemeal decisions on individual actions miss this larger picture. We encourage all parties involved in Sacramento Basin water management to work towards development of a more comprehensive and integrated plan for surface-groundwater management, including a regional analysis of objectives, related water management activities, and potential environmental impacts. Such an analysis would be especially important in considering the cumulative effects of the many actions being taken to provide more reliable water supplies within the Basin, to respond to community growth, and in, some cases, to support out-of-basin transfers of water.

5-2

Because the Bureau is a major regional water supplier, the importance of its participation in a comprehensive analysis is clear. This role is not immediately evident in the context of this Glenn-Colusa Irrigation District test project DEA.

We appreciate the opportunity to review this DEA. When the Final EA is released, please send one copy to the address above (mail code: CED-2). If you have any questions, please contact me at 415-972-3521, or Laura Fujii, the lead reviewer for this project. Laura can be reached at 415-972-3852 or [fujii.laura@epa.gov](mailto:fujii.laura@epa.gov).

Sincerely,



Kathleen M. Goforth, Manager  
Environmental Review Office  
Communities and Ecosystems Division

cc: California Department of Water Resources  
Glenn-Colusa Irrigation District



**Final**  
**Responses to comment letters on GCID Stony Creek Fan**  
**ATP**  
**January 23, 2009**

**A.    Responses to BEC Comment Letter 1**  
**Received from Barbara Vlamis**  
**Executive Director**  
**Butte Environmental Council**  
**116 West Second Street, Suite 3**  
**Chico, CA 95926**

**Response to Comment 1-1**

*Comment Summary: Reclamation needs to prepare an EIS.*

Reclamation is not required to prepare an Environmental Impact Statement (EIS) if there are no significant impacts on the quality of the human environment resulting from the proposed action.

The purpose of this aquifer performance test (APT) is to examine the aquifer's extent, response to pumping, and physical and operational characteristics. The information would be used to make future water management decisions. The amount of groundwater to be pumped (up to 26,530 acre-feet/year) during the two year testing period, represents two percent of the average volume of annual groundwater production in the Sacramento Valley. The pumping will not significantly affect the quality of the human environment.

The proposed drilling would not have significant effects on the region's environmental and hydrological conditions. The details of well installation are provided in the EA (page 6-8.) Construction associated impacts would occupy a small area for each well and installation would be performed by knowledgeable drilling personnel.

Reclamation has determined that this is not a major federal action significantly affecting the quality of the human environment, and, therefore an environmental impact statement (EIS) is not required.

**Response to Comment 1-2**

*Comment Summary: The project may result in significant adverse environmental impacts and poses significant unknown risks to the environment.*

The proposed action will not result in any significant adverse environmental impacts because the risks associated with drilling and installing wells and using wells for groundwater production are well known. Water users in the state of California make use of groundwater often. The data gathered from the proposed action would be used to

formulate answers regarding current gaps in existing scientific research on the hydrology of the aquifer system.

The duration of the proposed action would be two-years of constant rate pumping throughout irrigation seasons. Total pumping amount would not exceed 26,530 acre-feet of groundwater per season. Again, the amount represents two percent of the regional average annual groundwater extraction which is around 1,200,000 AF/year. A monitoring and mitigation has been developed and is included in the proposed action to ensure there would be no significant adverse impacts to the environment.

### **Response to comment 1-3**

*Comment summary: The EA fails to describe and discuss the following characteristics of the regional aquifer: (1) saline water at depths ranging from 1,500 to 3,000 feet; (2) the pressurized condition of the down-gradient portion of the aquifer; (3) groundwater direction of flow; and (4) ancient age of certain water in the aquifer.*

In regards to saline water at depths ranging from 1,500 to 3,000 feet, GCID proposes to drill the test production wells at depths ranging from 700 to 1,500 feet bgs. GCID currently operates a well under a test program at its Hamilton City Pumping Plant (HCPP, which is at a similar depth as the wells proposed in this EA, approximately 1,300 feet deep, above identified saline water levels. Further, the Department of Water Resources (DWR) monitors the base of fresh water, and as test pumping is conducted, active water quality monitoring would occur. Water would not be extracted directly from saline stratum. Movement of saline water into non-saline areas due to pumping is not anticipated. If there is an indication, based on monitoring, of saline intrusion, mitigation would occur.

In regards to the pressurized condition of the down-gradient portion of the aquifer and groundwater direction of flow, there is current data suggesting that groundwater flow is in fact not westerly from Chico, rather generally more north to south. The new monitoring wells observe changes in the regional aquifer that result from test pumping at GCID's HCPP well. The attached maps, which show groundwater gradients in the Upper and Lower Tuscan geologic formations, reveal the north to south flow.

In regards to ancient age of certain waters in the aquifer, the comment does not state or infer how this affects geologic properties of the groundwater system or how estimated water dating should affect use of water from this aquifer. Water quality would be monitored during the proposed action.

The comment also introduces issues related to fluctuations in the aquifer system, however, no substantial data, evidence, or facts are currently available to identify how the Lower Tuscan groundwater system functions and responds, which is a primary purpose of this test program.

Lastly, the Dudley 2005 reference used by BEC supports an aquifer performance test program and concludes as follows:

#### **“FURTHER INVESTIGATIONS**

A lot has been learned about the freshwater aquifer systems in the past few years and more information is needed to assure that the groundwater resources are managed responsibly. **Testing is needed to measure the aquifer parameters by conducting aquifer performance testing.** “

#### **Response to Comment 1-4**

*Comment Summary: The EA relies on inadequate monitoring wells and a local groundwater management plan to determine when the effects of the project may be adverse.*

Reclamation agrees that monitoring the potential environmental effects of the proposed groundwater extraction is an essential component of this study. Reclamation is supportive of monitoring possible effects in the vicinity of the test-production wells such as groundwater drawdown, groundwater quality and land subsidence. Due to the small amount of water to be pumped during the proposed action, impacts to streams are not anticipated.

More specifically, the EA points out that DWR monitors groundwater levels in over 100 single and multi-completion observation wells throughout the northern Sacramento Valley on a quarterly basis, as well as in over 300 irrigation and domestic wells semi-annually. The EA states that existing wells would be used to monitor pumping effects induced by the proposed test-production wells. DWR has observation wells located within a three- to four-mile radius of several of the proposed test-production wells.

In order to clarify the specific standards, protocol and monitoring well locations that would be used in the proposed study, Reclamation has included a more detailed monitoring plan, Appendix E, to the EA.

#### **Response to Comment 1-5**

*Comment summary: The program element to halt pumping to avoid adverse impacts is not believable.*

The EA does not recognize that the proposed action may result in “significant” declines in groundwater levels. Instead, declines in local groundwater levels due to the proposed action, would be short-term and minimal and would be reported. Such declines are not adverse impacts to the environment; the changes that would occur are necessary to generate the data that would result in furthering knowledge of the characteristics of the local and regional aquifers. The data would be used to refine an existing groundwater model and would assist in more thorough and accurate environmental review for any future groundwater development projects.

Reclamation recognizes that declines in groundwater would occur, however, monitoring and mitigation is proposed to avoid situations that could result in significant adverse effects to the environment. Furthermore, it is anticipated that any declines in groundwater levels would fully recover. See response to comment 1-4.

**Response to Comment 1-6**

*Comment summary: Monitoring based on the Glenn County Groundwater Management Plan is insufficient.*

Reclamation has included a monitoring and mitigation plan to ensure that no significant adverse impacts would occur to the environment. The proposed monitoring and mitigation plan would be used in conjunction with the Glenn County Groundwater Management Plan as well as any applicable AB3030 plans and local BMO's.

**Response to Comment 1-7**

*Comment Summary: The EA's proposed monitoring is inadequate because it fails to account for delayed subsidence.*

As described in the attached memo from Mr. Loy, due to the relatively high density of existing clays in the region there is no expectation of subsidence. DWR has eight extensometers in the Sacramento Valley that measure land subsidence and several counties (four) in the northern Sacramento Valley have established a global positioning system land subsidence network.

Real-time land subsidence monitoring is proposed during the limited duration (two years) of the operational testing. At the end of this period, the success and effects of the study would be analyzed. If the production wells are proposed for use beyond the two year study, further environmental review would be required. It would be more appropriate, at that time, to formulate a long-term approach for monitoring possible "delayed subsidence" directly attributable to long-term use of the wells. Delayed subsidence would be difficult to measure based on the proposed amount of water to be pumped and the time period. Furthermore, it is highly unlikely to occur as a result of the proposed action.

**Response to Comment 1-8**

*Comment Summary: The project fails to include stream monitoring.*

Reclamation agrees that there is an interaction between groundwater and surface water. Streams east of the Sacramento River were not considered due to their distance from the proposed well locations. In addition, there are numerous private and local pumping activities in the upper strata of the aquifer system that occur east of the Sacramento River. It would be extremely difficult to discern any surface water impact that may be attributable to the proposed action, because the magnitude of the proposed action is small when compared to regional average annual pumping. Surface water monitoring could potentially take place on Stony Creek.

**Response to Comment 1-9**

*Comment Summary: The EA fails to identify and address the significant unknown risks associated with this Project.”*

The proposed action is being conducted in order to collect data that would answer questions about the aquifer system. The EA addresses all known risks, and reaches the reasonable conclusion that the project would not result in adverse environmental impacts. Expert hydrologists and hydrogeologists have considered the duration of pumping (2 years), the quantities of groundwater to be pumped, and what is currently known about the regional aquifer system, and concluded that the project would not result in significant adverse impacts to the environment. The project would modify or cease pumping if monitoring efforts indicate that continuing pumping would result in impacts to local or regional wells.

See response to comment 1-4.

The SCF Partners have consulted with Ms. Hoover and Todd Greene at Chico State University for inclusion in technical oversight and findings related to this test program.

In regards to the Butte County DWRC 2007 reference, that work plan discussed the need for a recharge assessment but also includes equally the need for testing of the aquifer system and states the following:

“A regional program of testing in the Lower Tuscan Formation aquifer system would benefit both Butte County and Stony Creek Fan groundwater models. The data determined from this testing would provide additional information.”

**Response to comment 1-10**

*Comment summary: An EIS is warranted because the proposed action is controversial.*

The proposed action is a two-year study designed to gather data on the Lower Tuscan aquifer system. The study would be carefully monitored and even halted if necessary. The proposed action discusses the techniques to be employed during the testing period, which includes a monitoring and mitigation plan which would prevent adverse environmental impacts from occurring. Factual disputes about adverse impacts associated with the proposed action are not presented in your comment. In fact, there is not enough scientific research or data regarding the Lower Tuscan aquifer system to support such claims that the proposed action would result in significant impacts to the human environment. The SCF Partners are attempting to better understand the aquifer system to benefit future groundwater decision making.

See response to comment 1-4.

**Response to Comment 1-11**

*Comment summary: The project would have significant cumulative impacts.*

The EA appropriately considers the cumulative impacts of the anticipated pumping of approximately 26,530 acre-feet/year when compared to the regional average pumping occurring per year (1,200,000 acre-feet), and the limited duration of the project. The proposed action would contribute an additional 26,530 acre-feet/year of groundwater pumping for two seasons (6 months each). However, the proposed action is not substantial in amount or time to have direct adverse cumulative impacts or indirect long-term cumulative adverse impacts on any resources identified in the EA. Furthermore, the monitoring and mitigation plan would avoid and minimize the potential for significant impacts to occur.

The actions that would occur in conjunction with the proposed action are local groundwater pumping for agricultural and municipal supply. The amount of this pumping is indicated above.

**Response to Comment 1-12**

*Comment summary: The EA improperly segments analysis of the Stony Creek Fan program.*

The EA does not segment the SCF program. A decision has not been made to proceed with a long-term conjunctive use project under the SCF program or any other program. The EA clearly states that the proposed action is a two-year research program, not a long term conjunctive use program. Reclamation has remitted a letter to the SCF Partners stating an understanding of the project and has requested a counter signature from the SCF Partners. The letter is attached in Appendix F to the EA.

The water programs mentioned in your letter, including

- Sacramento Valley Integrated Regional Water Management Plan (2006)
- Sacramento Valley Regional Water Management Plan (2006)
- Stony Creek Fan Conjunctive Water Management Program
- Sacramento Valley Water Management Agreement (Phase 8, October 2001)
- Draft Initial Study for 2008-2009 Glenn-Colusa Irrigation District Landowner Groundwater Well Program
- Regional Integration of the Lower Tuscan Groundwater Formation into the Sacramento Valley Surface Water System through Conjunctive Water Management (June 2005).

The SCF Aquifer performance testing plan is a study to gather data on the Lower Tuscan aquifer system. The proposed action is not dependent upon any of the above mentioned plans for implementation. Furthermore, although the plans above have been birthed, only one, GCID Landowner Groundwater well program, has completed environmental documentation. The GCID Landowner Groundwater Well Program was not accepted by the GCID Board and will not be implemented. None of the other plans mentioned would be implemented or occur in conjunction with the proposed action.

**Response to Comment 1-13**

*Comment Summary: The EA fails to analyze the cumulative impact of the SCF APT and SCF Program.*

Beginning on page 49, the EA explains why the SCF APT would not have cumulative impacts to groundwater resources. The limited duration of the project and the amount of water to be pumped (26,530 acre-feet/year when compared to the estimated 1,200,000 acre-feet of groundwater that is pumped annually from the region) would not result in cumulative impacts. In terms of the SCF Program, full program implementation has not occurred and it is not certain that it will occur. Reclamation would not be able to complete a cumulative effects analysis on indeterminate actions.

Page 24 in the EA discusses environmental consequences to surface water resources.

The “Landowner Groundwater Well Program” was not accepted by GCID board members and will not be implemented.

The Lower Tuscan Integrated Planning Program is in its infancy. Discussions regarding local and regional management of water supplies, such as the Lower Tuscan Planning Program (LTPP), have been ongoing and would continue. A cumulative effects analysis on the LTPP in conjunction with the SFC APT is not reasonably foreseeable because scientific data about the aquifer system is lacking. The LTPP is undefined and cannot be considered as a future foreseeable action with “on the ground” impacts. It is merely a planning effort. A cumulative effects analysis would be extremely difficult, if not impossible to conduct, without further information about LTPP objectives.

**Response to Comment 1-14**

*Comment Summary: The SCF APT is likely to serve as precedent for future actions.*

The APT is a two-year program and the test production wells would not be used after conclusion of the program unless there is a subsequent decision to do so that is supported by the appropriate level of environmental review. This commitment is confirmed in the SCF APT itself, the notice of exemption issued by GCID in the related CEQA review process (See Appendix A), the EA (page 15), as well as briefs filed in the Superior Court litigation and the Court’s ruling in that case.

Further, the proposed action is not precedent setting because it is not a proposal to engage in new activities or technology. There are already groundwater wells present in the area, and groundwater is used extensively throughout the Sacramento Valley. The proposed action is simply a research activity to further the amount of knowledge about an aquifer system and subsequently use that data to make future water management decisions.



**Response to Comment 1-15**

*Comment Summary: The SCF APTP would likely have significant environmental effects on the Giant Garter Snake.*

A biological assessment was prepared for effects to giant garter snake. Reclamation determined that the project may affect, but is not likely to adversely affect giant garter snake.” The BA concludes that “[a]ny effects to GGS or potential GGS habitat would be discountable, or extremely unlikely to occur. Any effects would also be insignificant, since effects can be avoided or minimized to a level where take would not occur.” (BA, p.17) Reclamation initiated Section 7 consultation with the United State Fish and Wildlife Service (Service) on August 4, 2008. Reclamation received a concurrence letter on September 25, 2008 from the Service (8142-2008-I-1916-1). See Appendix C.

**Response to Comments 1-16 and 1-17**

*Comment summary: The EA fails to consider a reasonable range of alternatives.*

The federal action considered in this matter was the issuance of a grant under the statutory authority of Public Law 109-103, Energy and Water development Appropriations Act 2006, the Act of November 19, 2005(119 Stat. 2267) Title II subsection 250. In order to meet the purpose and need for the proposed action, the installation of test production wells is necessary. The use of existing production wells is not adequate to produce the measurable effects in the desired aquifer strata (Lower Tuscan). Few production wells exist within the SCF Partners service areas that pump from the desired aquifer level. Existing monitoring wells located in both of the shallower and deeper aquifer strata would be utilized for this project.

The Council on Environmental Quality (40 CFR 1502.14) requires a reasonable range of alternatives if there are unresolved conflicts over the use of a resource. In this instance, issuing funds for the subsequent construction of wells for research was the only reasonable alternative to consider. The proposed action is not anticipated to interfere with any other use of groundwater supplies in the Lower Tuscan Formation.

Further, 40 CFR 1502.14, 516DM 4.10.A.(2) *Reasonable alternatives include those that are practical or feasible from the technical or economic standpoint and using common sense rather than simply desirable from the stand point of the applicant.*

**Response to Comments 1-18 and 1-19**

*Comment Summary: The EA concedes there would be significant impacts associated with the project but fails to demonstrate how those impacts would be avoided.*

The EA explicitly states the contrary. The EA concludes that the short duration of the proposed action and the quantity of water to be pumped would not result in significant impacts to the environment. Moreover, the EA makes clear that if pumping activities associated with the proposed action are impacting local wells, then the test program would be adjusted or halted to avoid any significant impacts to the environment. The short-term lowering of local groundwater levels would not result in significant impacts to

the environment, because the aquifer is anticipated to fully recover when pumping ceases. In addition, pumped groundwater conveyed through local delivery systems and applied to crops in the SCF Partners service areas would provide an amount of recharged water. Reclamation understands lowering of groundwater levels could cause concern for local well owners. The proposed action would not be operated in a manner that would adversely impact local well owners.

Monitoring and mitigation has been included in the proposed action and would be used in conjunction with the Glenn County Groundwater Management Plan to avoid and minimize potential impacts to groundwater resources and other groundwater users.

#### **Response to Comment 1-20**

*Comment summary: The EA does not provide sufficient evidence to support its conclusion that the Project would not have significant hydrological impacts.*

See response to comments 1-18 and 1-19 See also Mr. Loy's memorandum explaining why the SCF APTP would not result in any significant hydrological or environmental impacts.

#### **Response to Comment 1-21**

*Comment Summary: The EA does not provide sufficient evidence to support its finding that the project would not have significant effects on the habitats of Swainson's hawk, bank swallow, greater sandhill crane, salmon and bald eagle.*

Reclamation staff visited the proposed well locations on May 8, 2008. GGS was the only species with potential habitat occurring in the action area(s). Reclamation consulted with the Fish and Wildlife Service on the proposed actions effects to GGS. Reclamation received concurrence with their determination of effects on the GGS on September 25, 2008.

The other species referred to in BEC's letter and comment summary above did not appear in the list obtained from the U.S. Fish and Wildlife database: [http://www.fws.gov/sacramento/es/spp\\_list.htm](http://www.fws.gov/sacramento/es/spp_list.htm) (080411031358) on June 10, 2008, and therefore were not included in the EA for analysis. The list pertained to the following 7 ½ minute U.S. Geological Survey quadrangles: Ord Ferry (577B), Hamilton City (578A), Orland (578B), Foster Island (594D), and Kirkwood (594C).

#### **Response to Comment 1-22**

*Comment Summary: The EA fails to assess the effect of the Project on the use of surface water.*

This application of groundwater to the service areas would augment surface water in the event of dry hydrologic year during Phase 3 of the proposed action. Surface water usage may be temporarily reduced by ground water usage during Phase 3 testing. Surface water reduction would be based on the needs of the SCF Partners, the hydrologic year type and the phase of the proposed action. SCF Partners would operate their surface water distribution systems as they ordinarily do, but with the groundwater produced from the

test production wells integrated into system operation. There would be no modification of the surface water distribution systems or change in service areas.

**Response to Comment 1-23**

*Comment Summary: The EA fails to analyze cumulative impacts.*

See responses to Comments 1-1 and 1-13.

**B. Responses to the City of Chico Planning Letter**

**Received from**

**Steve Peterson**

**Planning Services Director**

**411 Main Street, 2<sup>nd</sup> Floor**

**PO Box 3420**

**Chico, CA 95927**

**Response to Comment 2-1**

*Comment Summary: The SCF Partners' previous collaboration with DWR, Reclamation, and other regional agencies suggests that the SCF APTP is part of a larger project to manage groundwater in the Central and Sacramento Valleys.*

The SCF APT is distinctly separate from larger efforts by local, state and federal agencies to comprehensively manage groundwater resources in the Central and Sacramento Valleys. Section 1.1, emphasizes that the SCF APTP is a narrow project limited to the exploration of the regional aquifer systems to better define their physical and operational characteristics, and the development of meaningful information and data for existing and future groundwater resources. Section 2.2, details the limited scope and duration of the SCF APT, including the fact that the application of project groundwater would be strictly limited to SCF Partners' service areas. The information gathered from the APT would be made available to the public and government agencies. This data would be available to support on-going and future planning and modeling studies.

Although, the SCF Partners have in the past collaborated with other districts and agencies, including DWR and Reclamation, the SCF APT is merely one component of the separate SCF Programs developed by the SCF Partners to investigate conjunctive water management within their service areas. Section 1.1, makes clear that Reclamation's role in the SCF APT would be limited to providing partial funding to facilitate coordinated actions among neighboring water purveyors, high levels of scientific rigor and quality control, and the wide dissemination of information.

**Response to Comment 2-2**

*Comment Summary: The EA fails to meaningfully evaluate the SCF APTP's cumulative impacts when considered with other past, present, and reasonably foreseeable future actions.*

NEPA regulations require that environmental documents review a project's cumulative impacts. "Cumulative impacts" are those impacts "which result from the incremental impact of the action when added to other past, present and reasonably foreseeable future actions," as well as those that "result from individually minor but collectively significant actions taking place over a period of time." (50 CFR §1508.7).

Sections 1.1 and 1.3 explain that the SCF APT involves only the exploration of the Lower Tuscan aquifer for the limited purpose of collecting and developing information to better understand the aquifer's physical and operational characteristics. The SCF APT is not part of any state or federal agency's broader programmatic efforts to manage groundwater in the Sacramento and Central Valleys. Consequently, Section 3.2.2.3, properly limits its discussion of cumulative impacts to surface water resources to the currently ongoing and future activities by the SCF Partners within the SCF Program area. Groundwater pumping on the east side of the Sacramento Valley is conducted by the city of Chico, as well as private landowners.

Due to the lack of meaningful data on its performance and operational characteristics, it is unclear what future groundwater management options are viable in the Lower Tuscan aquifer system. In addition, Reclamation has limited information about the amount of pumping undertaken by the City of Chico and other private entities. Consequently, although there would be an additional effect of groundwater pumping (up to 26,530 acre-feet) for two years (May-October), the proposed action is limited in time and amount and would not contribute to cumulative adverse impacts to any resource identified in the EA.

The list of future plans in your letter refers to water management efforts at a larger regional scale. However, none of the plans listed in your letter would have on the ground implementable actions occurring in conjunction with or concurrently with the proposed action. In the event that proposed action test wells are integrated for long-term permanent use, future environmental review would be necessary and would evaluate the cumulative impacts of long term, permanent use.

**Response to comment 2-3**

*Comment Summary: The EA should evaluate potential impacts as if the SCF APTP's test wells were to become permanent.*

Section 1.1 and 1.3, beginning at page 1, describe the SCF APTP as a narrow project, strictly limited to the exploration of the regional aquifer system for informational purposes and does not include permanent groundwater production from any of the proposed test wells. Reclamation and the SCF Partners recognize that future environmental review would be necessary if the test production wells are to be used beyond the duration of the two year project.

The proposed action may have a nominal impact, but it is anticipated there would not be any significant effects on the City of Chico's groundwater supply. Section 3.2.2.3, at page 49 discusses the proposed action's cumulative effect on groundwater and geologic resources and explains that the total extraction would not exceed up to 26,530 acre-feet/year of groundwater for two years. This total amounts to approximately a two percent (2%) increase in the 1,200,000 acre-feet of groundwater annually extracted from Sacramento Valley portion of Butte, Colusa, Glenn, and Tehama Counties. When considered with the proposed action's limited duration (2 years), this small increase would not have a significant impact on the region's other groundwater extraction activities, including those of the City of Chico. Furthermore, Sections 3.2.2.2 and 3.2.2.3 explain that the SCF APTP would be modified or terminated if monitoring data suggests the project may have adverse impacts to the aquifer's groundwater or geologic resources.

#### **Response to Comment 2-4**

*Comment Summary: The EA contains a discrepancy regarding the effect of groundwater extraction in the basin when compared to other reports.*

The comment confuses the significance of the aquifer's radius of influence measurements and the location of an aquifer's recharge source. The deep aquifer radius of influence figure measures the extent to which draw down is impacting groundwater levels in a test well's vicinity. Wholly different is the location of the aquifer's recharge source. As such, no discrepancy exists between Section 3.2.2.2 deep aquifer radius of influence figures and the location of the aquifers recharge source contained on DWR's Glenn-Colusa Irrigation District Aquifer Performance Testing report.

### **C. Responses to the PCL Letter**

**Charlotte Hodde**

**Water Policy Analyst**

**1107 9<sup>th</sup> Street, Suite 360**

**Sacramento, CA 95814**

#### **Response to Comment 3-1**

*Comment summary: The project description is incomplete, and results in an incomplete analysis of project impacts.*

This comment states that the project description should discuss the importance of the proposed action in meeting statewide drought demand. Section 3.2, beginning at page 25, discusses the proposed action's impacts on the aquifer's groundwater and geologic resources. Section 3.2.2.3, at page 49, concludes that the proposed action would not have a significant effect on these resources based on the project's limited duration (2 years) and the extraction of up to 26,530 acre-feet/year would only amount in a two percent (2%) increase in the 1,200,000 acre-feet extracted from the Sacramento Valley portion of Butte, Colusa, Glenn and Tehama Counties.

This comment states that the proposed action would have a significant impact on the availability of water for transfer and sale during dry years. First, water transfers are not part of the proposed action. Section 2., explains that although the proposed action would continue for two years, groundwater extraction would not be continuous for that period, but instead be primarily limited to the two consecutive irrigation seasons following Phase 2 testing. Secondly, the EA explains that the proposed action would result in the extraction of up to 26,530 acre-feet/year of groundwater. Finally, Section 3.1.2.2., at page 24, makes clear that the project groundwater would be used exclusively in the SCF Partners' service area for irrigation purposes. .

To the extent this general comment suggests that GCID intends to use surface water supplies for statewide drought relief, see the more specific response to comment 3-3, below.

### **Response to Comment 3-2**

*Comment Summary: The Planning and Conservation League is supportive of expanding the existing knowledge of the regional aquifer system.*

Reclamation and the SCF Partners appreciate the support of PCL in the efforts to better understand the Sacramento Valley groundwater system. All information gained during the proposed action would be made available to the public.

### **Response to comment 3-3**

*Comment Summary: The SCF APTP includes providing water to meet the demands of the statewide drought.*

This is not accurate. Section 1.3, explains that the purpose and need of the proposed action to develop important information that is currently lacking, but needed to responsibly plan groundwater development and management within the SCF Program study area. Furthermore, Section 3.1.2.2, at page 24 explicitly states that all groundwater produced from the project's test wells would be exclusively used within the SCF Partners' service areas. There may be confusion about how a dry year may affect the use of groundwater and surface water within the SCF Partners service area. At no time during the proposed action would water be used for statewide drought purposes. To the extent that test wells become permanent and future groundwater is provided or used to augment surface flows for use outside the SCF Partners' service area, Section 2.2.1.3 recognizes that future environmental review would be required.

See Response to Comment 1-12.

**Response to comment 3-4**

*Comment summary: This comments requests an explanation as to why the USGS was not consulted to review the EA and the SCF APTP.*

Reclamation is not required to involve agencies (i.e. USGS) in the review of EA's for which that agency doesn't have a federal action; however, the USGS is not precluded from participating in this effort. Changes have been made to the EA based on information gathered from the USGS.

**Response to comments 3-5 and 3-6**

*Comment Summary: Because the Stony Creek Fan Aquifer extends beyond the SCF Partners' service area, the EA should analyze the SCF APTP's impact throughout the State Water Project delivery system, including the San Joaquin/Sacramento Bay Delta.*

The proposed action's limited extraction of groundwater for test purposes would not have an impact on State Water Project delivery system or the San Joaquin/Sacramento Bay Delta. An analysis of that scale is outside the scope of the proposed action. At this time, insufficient data exists on the impacts current and future groundwater extraction may have on the aquifer. Section 1.3 explains that the purpose of the proposed action is to develop information and data for meaningful management of the Stony Creek Fan Aquifer.

Furthermore, the little information currently available suggests the proposed action would not have a significant impact on the regional aquifer system beyond the SCF Partners' study area. Section 3.2.2.2, at page 48, explains that in Spring 2007 where the test-production well was pumped at a near-constant rate of approximately 3,500 gpm for 28 days (approximately 433 acre-feet). Results from the test indicate that drawdown effects were evident in the deeper aquifer systems (approximately 700 to 1,000 feet below ground surface) at a distance of two miles, but were not in the next closest deep aquifer monitoring well at a distance of five miles. As a result, the deep aquifer radius of influence on the project's test wells is estimated between three to five miles. Shallow aquifers in the vicinity of the deep aquifer pumping well showed no apparent response to the deep aquifer pumping. In sum, the above evidence suggests the proposed action would not have an impact on the entire regional aquifer system.

**Response to Comment 3-7**

*Comment Summary: The Project Description should specify that the SCF Partners intend to use project groundwater to augment surface water supplies during dry hydrologic conditions.*

Section 1.1, makes clear that "the current emphasis of the SCF Program is the exploration of the regional aquifer systems to better define the physical and operational characteristics of those systems, and to better understand the potential effects of ongoing and potential future groundwater development." In the event that SCF Partners do not receive their full allotment, Section 3.1.2.2, at page 24, discusses the environmental impacts resulting from the augmentation of surface water supplies with project



groundwater. While project groundwater would be applied for irrigation within the SCF Partners' service area, the augmentation of surface water supplies with groundwater is not a purpose of the proposed action. To the extent that the test wells become permanent and are used to augment future surface water supplies, Reclamation and the SCF Partners recognize that future environmental review would be required.

### **Response to Comment 3-8**

*Comment Summary: The project description should specify that the SCF Partners intend to use project groundwater to augment surface water supplies in the event of a shortage.*

See response to comment 3-7.

### **Response to Comment 3-9**

*Comment Summary: The EA should be written so that Section 2's Project Description includes analysis of the SCF APTP's impact on the statewide drought, or makes clearer that the project groundwater would be restricted for monitoring purposes.*

See response to comment 3-3.

### **Response to Comments 3-10 and 3-11**

*Comment Summary: The SCF APTP's monitoring for significant decline in groundwater levels should not be restricted to the relevant vicinity of the test pumps, but should also include the basin-wide impacts.*

The monitoring of groundwater levels in the 'relevant vicinity of the test pumps' was designed to ensure that the proposed action is modified or terminated only for those declines directly attributable to the pumping of the project's test wells. As discussed above, Section 3.2.1.2, at page 36, explains that the multi-day constant discharge aquifer test conducted by DWR Northern District in spring 2007 resulted in drawdown effects from deep aquifer groundwater pumping (700 to 1,000 feet below the ground surface) at a distance of two miles, but not at five miles. Therefore, the deep aquifer's radius of influence is estimated between three to five miles. Shallow aquifers near deep aquifer pumping wells showed no evidence of drawdown.

### **Response to Comment 3-12**

*Comment summary: The SCF APTP's monitoring program of groundwater levels should include an outreach program for private well owners or upper Sacramento tributaries outside of the GCID service district area.*

Reclamation has included monitoring and mitigation in the proposed action which includes public outreach. See response to comment 1-4 and 3-3.

**D.     Responses to League of Women Voters of Butte County**  
**Sharon Wallace**  
**President**  
**League of Women Voters of Butte County**

**Response to comment 4-1**

*Comment summary: Little is known about the Lower Tuscan aquifer's recharge mechanism and rate of recharge.*

Reclamation and the SCF Partners recognize the lack of information and explain that the proposed action is designed with the narrow scope of developing the information necessary to responsibly manage the groundwater resources of the regional aquifer. Section 2.2.1.1 at page 5, explains that the proposed action would be conducted over a two-year period, while Section 3.2.2.2, describes the limited amount of (up to 26,530 acre feet/year) of groundwater to be extracted in comparison to the aquifer's regional average annual production (1,200,000 acre-feet). Finally, in the event that any of the test wells become permanent, Section 2.2.1.3, recognizes that further environmental review would be required.

Your statement indicating that little is known about the Lower Tuscan is correct, that is precisely why the SCF Partners are conducting the aquifer performance testing.

**Response to comment 4-2**

*Comment summary: The lack of recharge in the Chico and Durham areas suggests that recharge does not naturally follow drawdown.*

As pumping continues and a cone of depression is formed, groundwater moves from areas of higher hydraulic head (away from pumping well) to area of lower hydraulic head (at the pumping well), and thus is discharged from the aquifer. The aquifer is recharged either by precipitation, stream flow or deep percolation of irrigation (applied) water. The aquifer may not always be fully recharged, which is an occurrence typical during periods of drought.

**Response to comment 4-3**

*Comment summary: The EA lacks any statement of what hypothesis the SCF APTP is testing, and there area insufficient monitoring wells located in the up-gradient portion of the Lower Tuscan Aquifers.*

NEPA does not require that an environmental assessment provide a "hypothesis" to be tested. Rather, NEPA requires that EAs "briefly provide sufficient evidence and analysis for determining whether to prepare an environmental impact statement or a finding of no significant impact." (40 CFR § 1508.9(a) (1).) Environmental assessments must "include brief discussions of the need for the proposal, of alternatives..., of the environmental impacts of the proposed action and alternatives, and a listing of agencies and person consulted." (40 CFR § 1508.9(a) (2).)

**Response to comment 4-4**

*Comment summary: The EA provides little protection for the environment and does not consider what impact the SCF APTP would have on the primary source of water for area residents.*

Section 3, goes into detail stating the proposed action would not have significant adverse impacts on surface water resources, groundwater and geologic resources, land use, air quality, biological resources, Indian trust assets, environmental justice, and cultural resources. In all instances, the EA concludes that the proposed action would not have a significant or cumulatively significant environmental impact.

**Response to Comment 4-5**

*Comment Summary: The SCF APTP should be postponed until a qualified, independent science board is able to determine (1) how the wells should be constructed in order to establish and ensure which aquifer is being drawn from; (2) how tests should be run to gain useful information and to identify what information needs to be sought; and (3) that a rigorous monitoring plan is in place to determine that no long-term is occurring to the aquifer.*

To the extent that this comment is concerned with the design of the test wells and how the tests should be performed, there is fairly detailed information in the EA that addresses well construction and development. A monitoring and mitigation plan has been included as part of the proposed action and would be used in conjunction with the Glenn County Groundwater Management Plan.

**Response to comment 4-6**

*Comment Summary: There are too many unknowns and too many example of overexploitation to be cavalier about pumping groundwater resources to meet the needs across the state.*

The proposed action is a two-year study to test the physical and operational characteristics of the Lower Tuscan aquifer system. Groundwater pumped would be used within the SCF Partners service areas. Using water from this project to meet the needs of the state is false. Meeting state water needs with project groundwater is not proposed and would not occur as part of the proposed action.

The purpose and need of the SCF APTP is to develop important information that is currently lacking, but needed to responsibly plan groundwater development and management within the SCF Program study area. Furthermore, section 3.1.2.2, explicitly states that all groundwater produced from the project's test wells would be exclusively used within the SCF Partners' service areas. If the test wells become permanent and future groundwater is provided or used to augment surface flows for use outside the SCF Partners' service area, Section 2.2.1.3, recognizes that future environmental review would be required. The EA makes clear that the groundwater produced as part of the proposed action would not be used across the State

**Response to comment 4-7**

*Comment Summary: More important than the SCF APTP is the protection of the overall aquifer system that produces 86% of the State's water supply.*

The proposed actions intent is to gather information and data to get a better understanding of the regional aquifer system. This information would ultimately assist in the protection of the groundwater system.

**E. Responses to Environmental Protection Agency Letter**

**Received from Kathleen M. Goforth**

**Manager**

**Environmental Review Offices**

**Communities and Ecosystems Division**

**US Environmental Protection agency**

**Region ix**

**75 Hawthorne Street**

**San Francisco, CA 94105, 3901**

**Response to comment 5-1**

*Comment Summary: Review of the EA suggests some significant issues need to be addressed. Those issues include: groundwater supply monitoring and mitigation, consideration of potential groundwater quality impacts, and assurance that the project would not extend beyond three years.*

Reclamation has incuded monitoring and mitigation into the proposed action. The monitoring and mitigation includes groundwater supply, groundwater level and groundwater quality monitoring. Reclamation has sent a letter to the SCF Partners to affirm our (Reclamation's) understanding that this is a two-year proposal and if the test wells would be used for production beyond that time, further environmental review and analysis would be required.

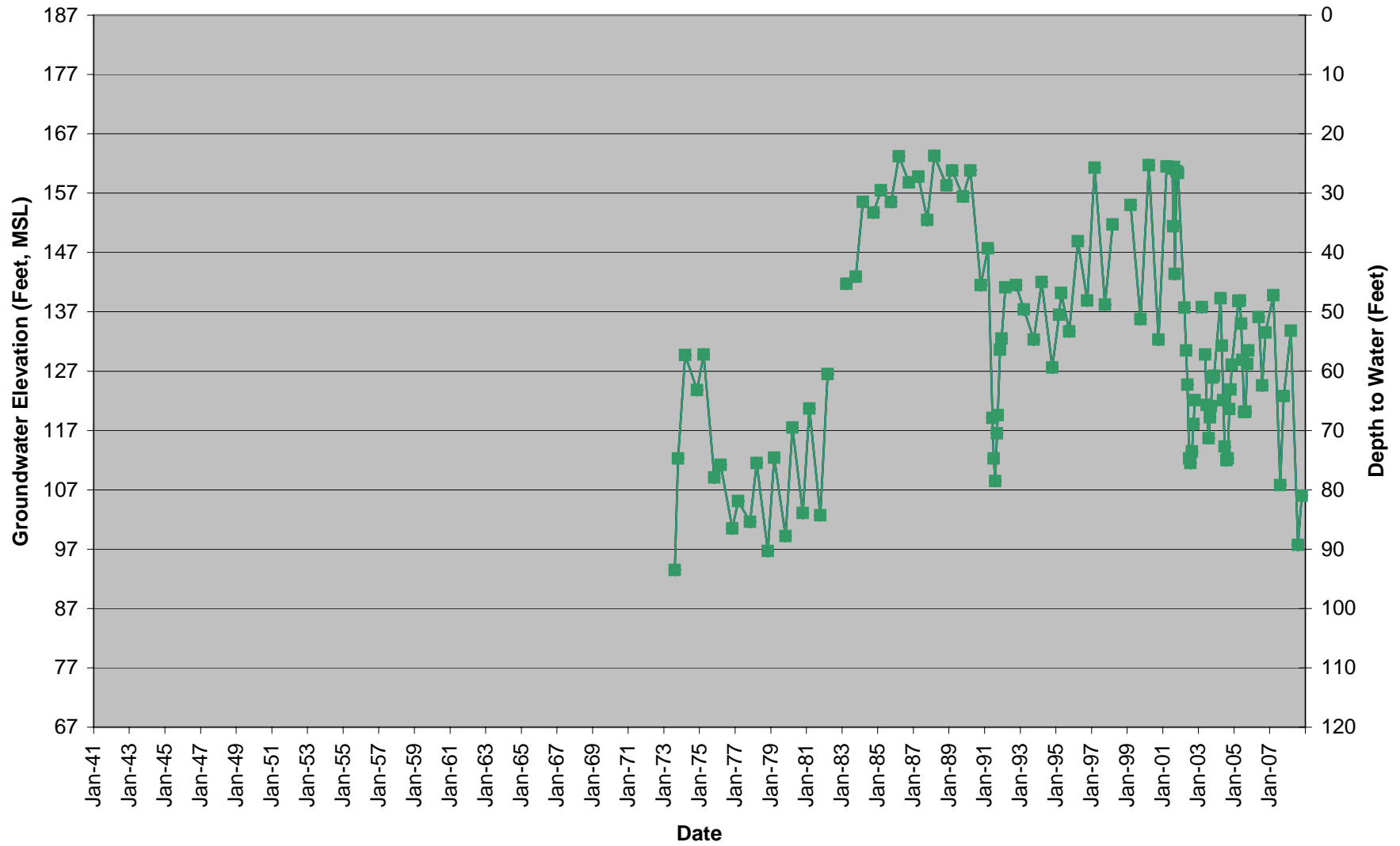
**Response to comment 5-2**

*Comment Summary: EPA encourages water management agencies to develop a more comprehensive and integrated plan for surface-groundwater management which includes a cumulative effects analysis.*

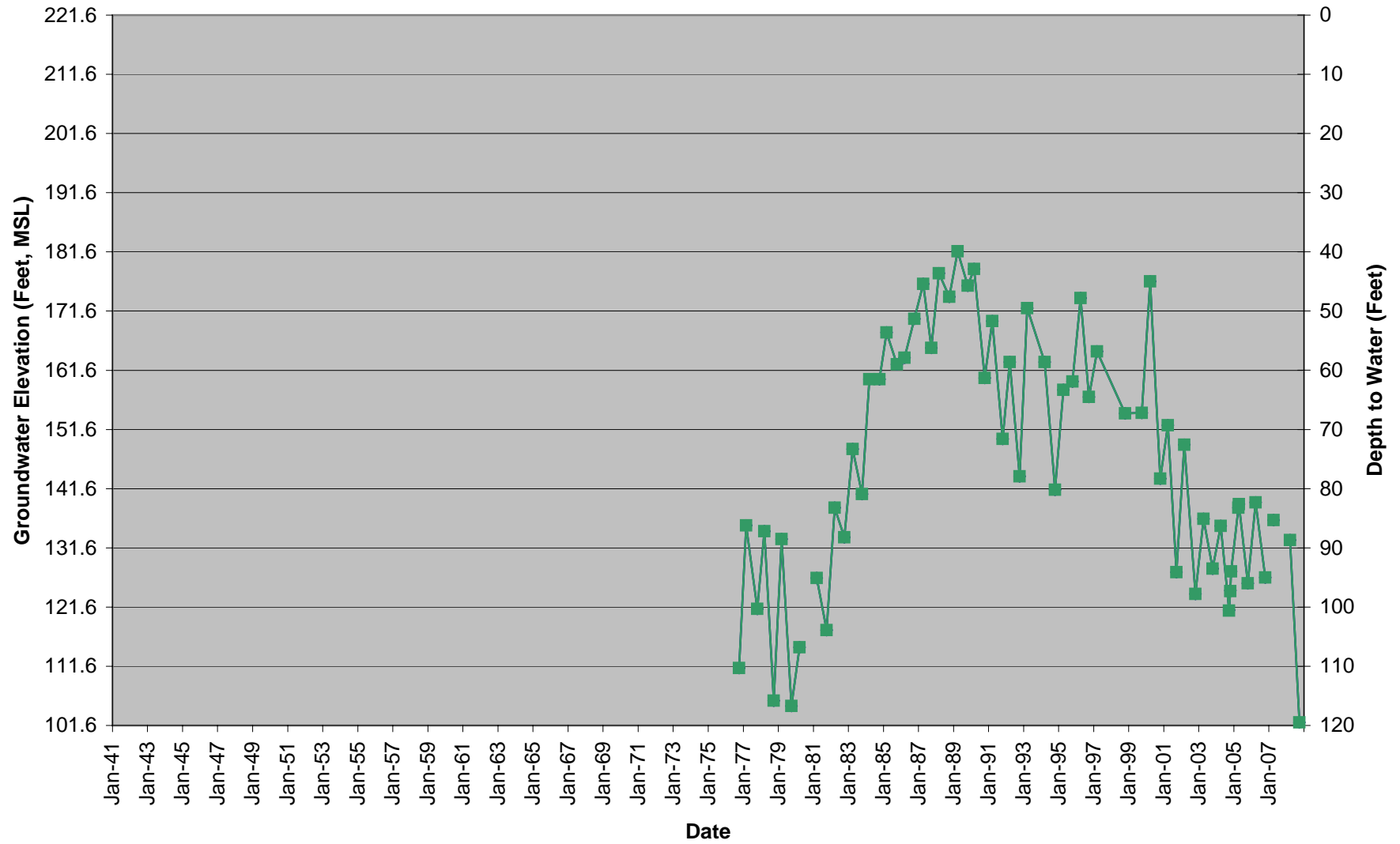
The nature of the proposed action is a two-year research effort to help define the physical and operational characteristics of the Lower Tuscan aquifer system. Given that consideration, a comprehensive and integrated plan is beyond the scope of this project. However, Reclamation agrees with your comment and is supportive of collaborative efforts intended for responsible and efficient surface water and groundwater management.

## **Appendix E – Groundwater Hydrographs**

# Hydrograph 21N03W31H001M

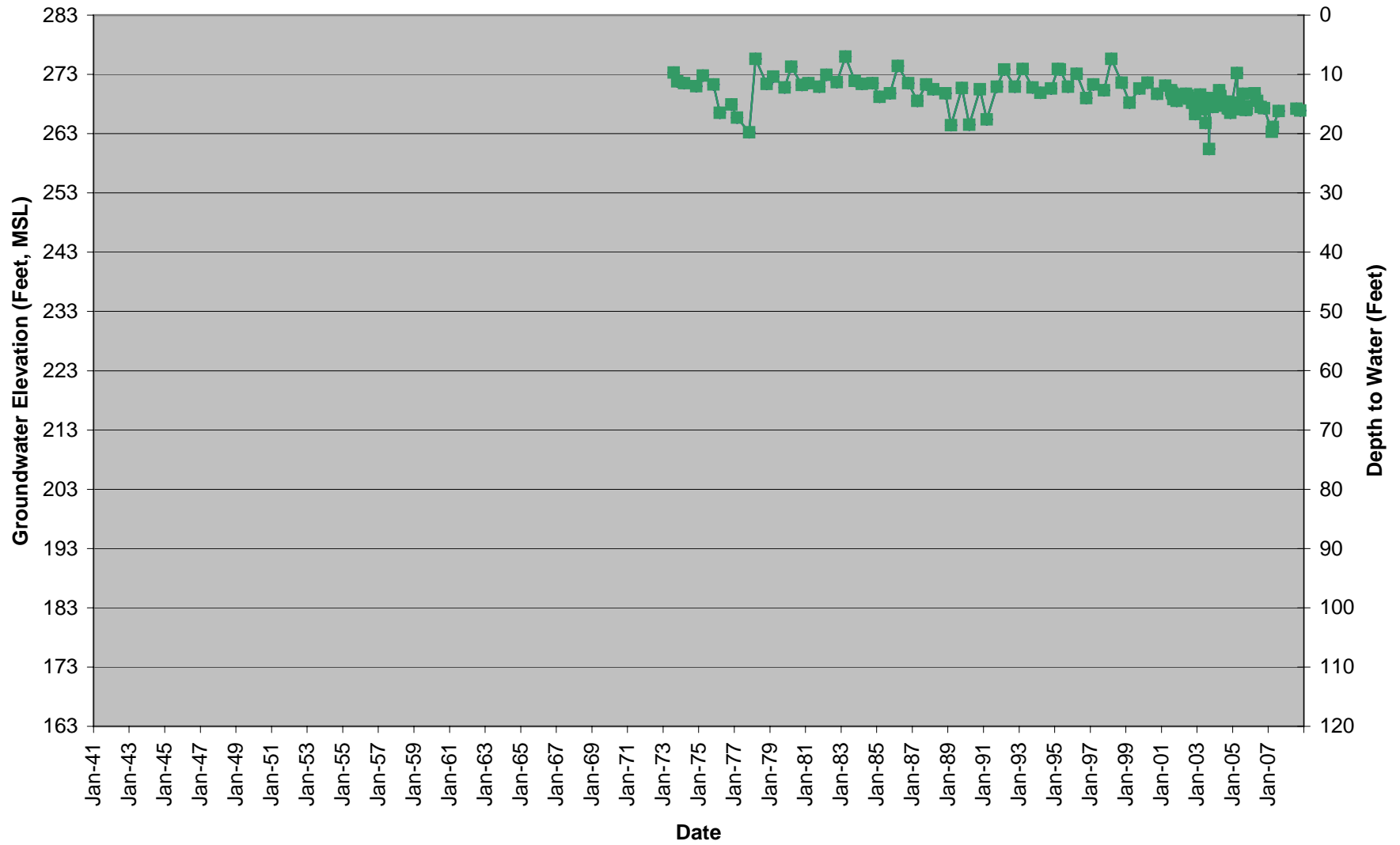


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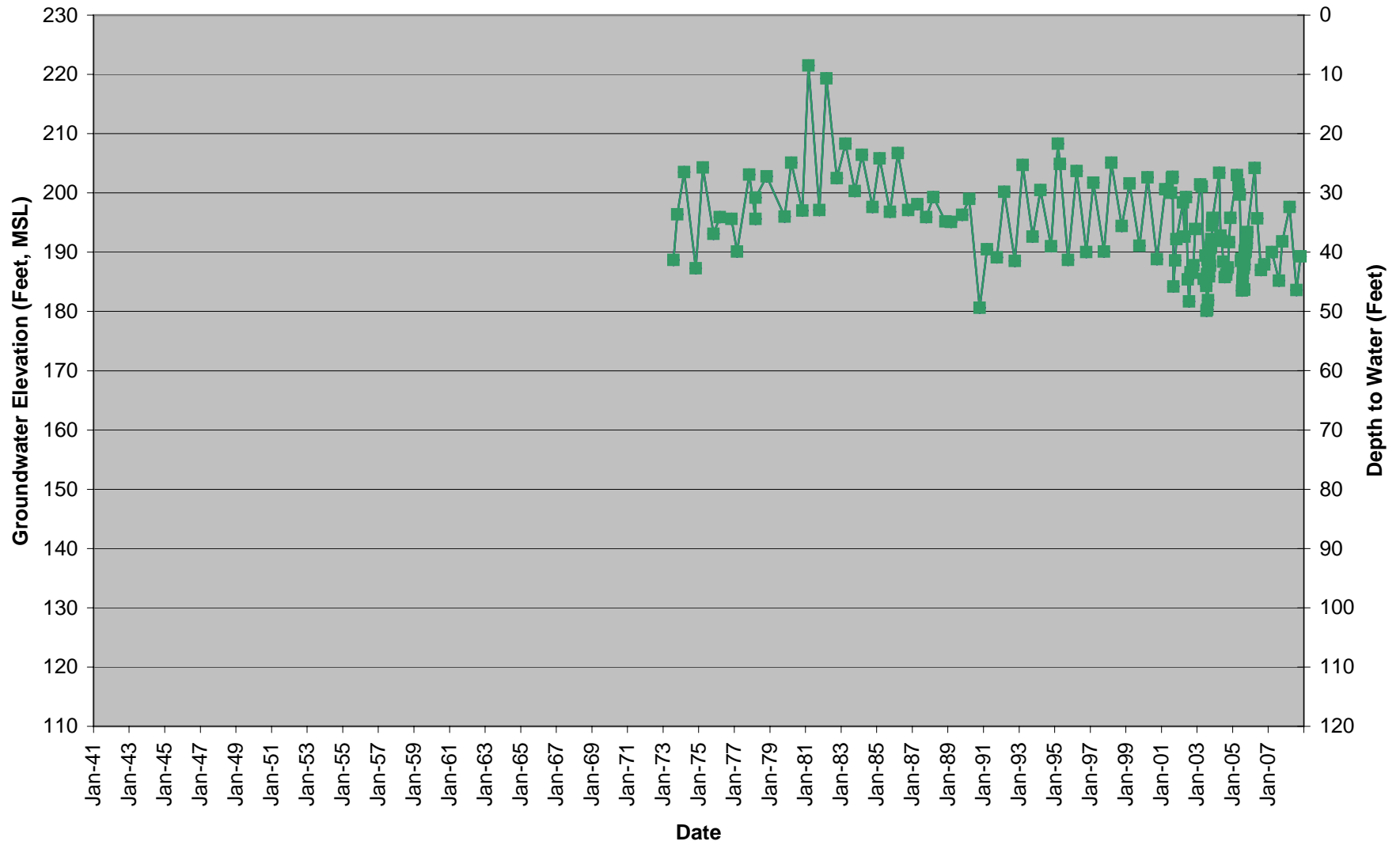




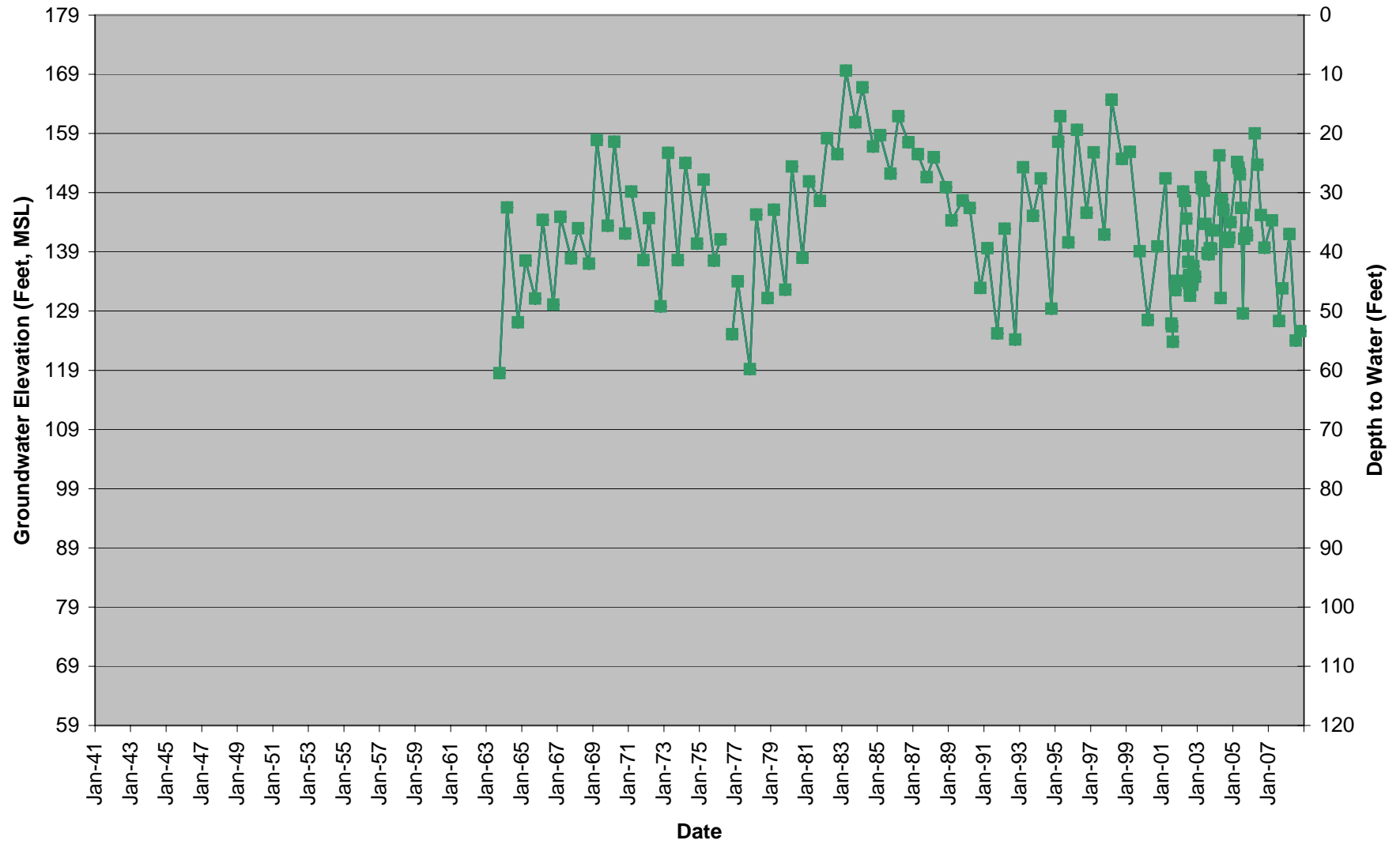
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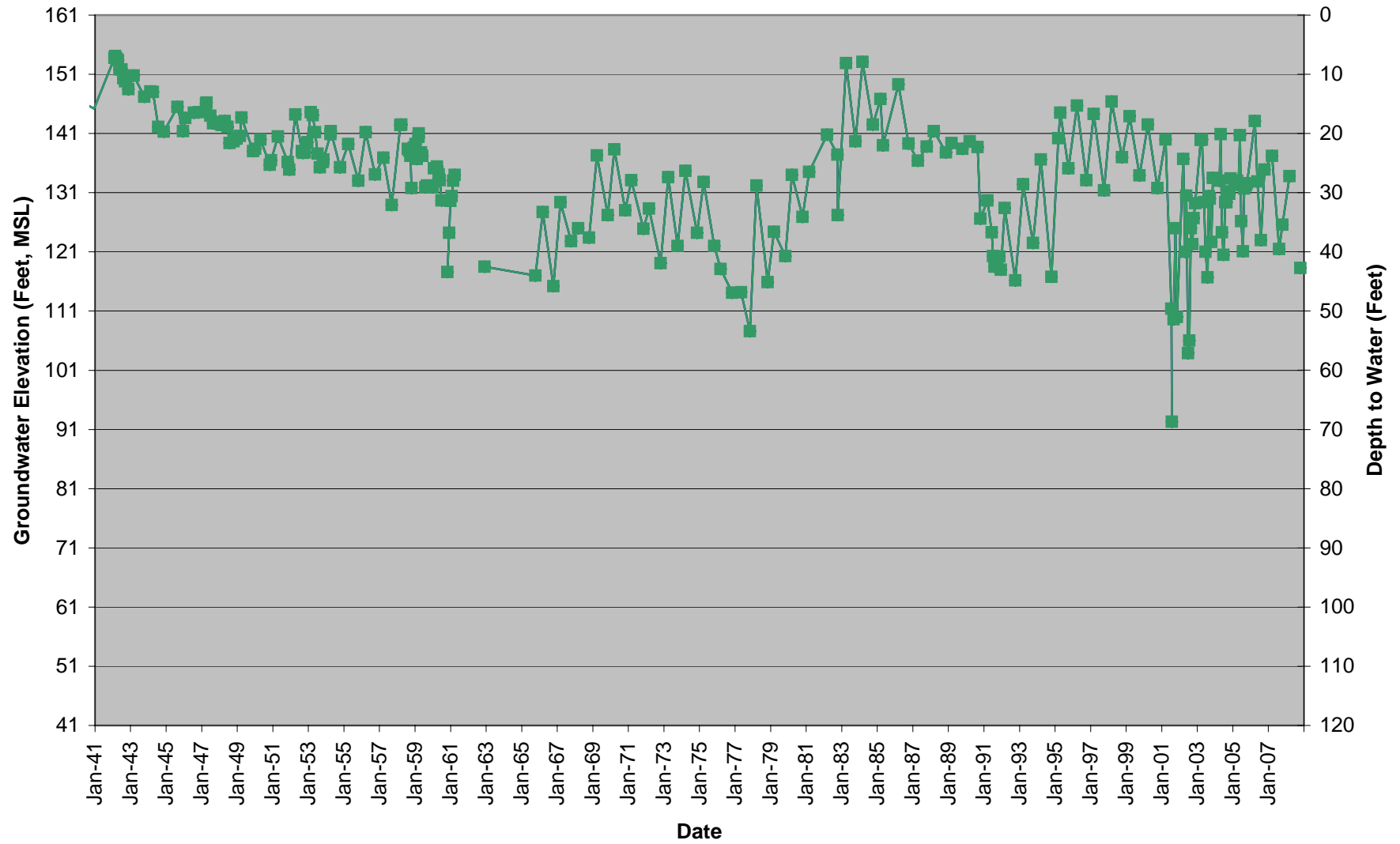
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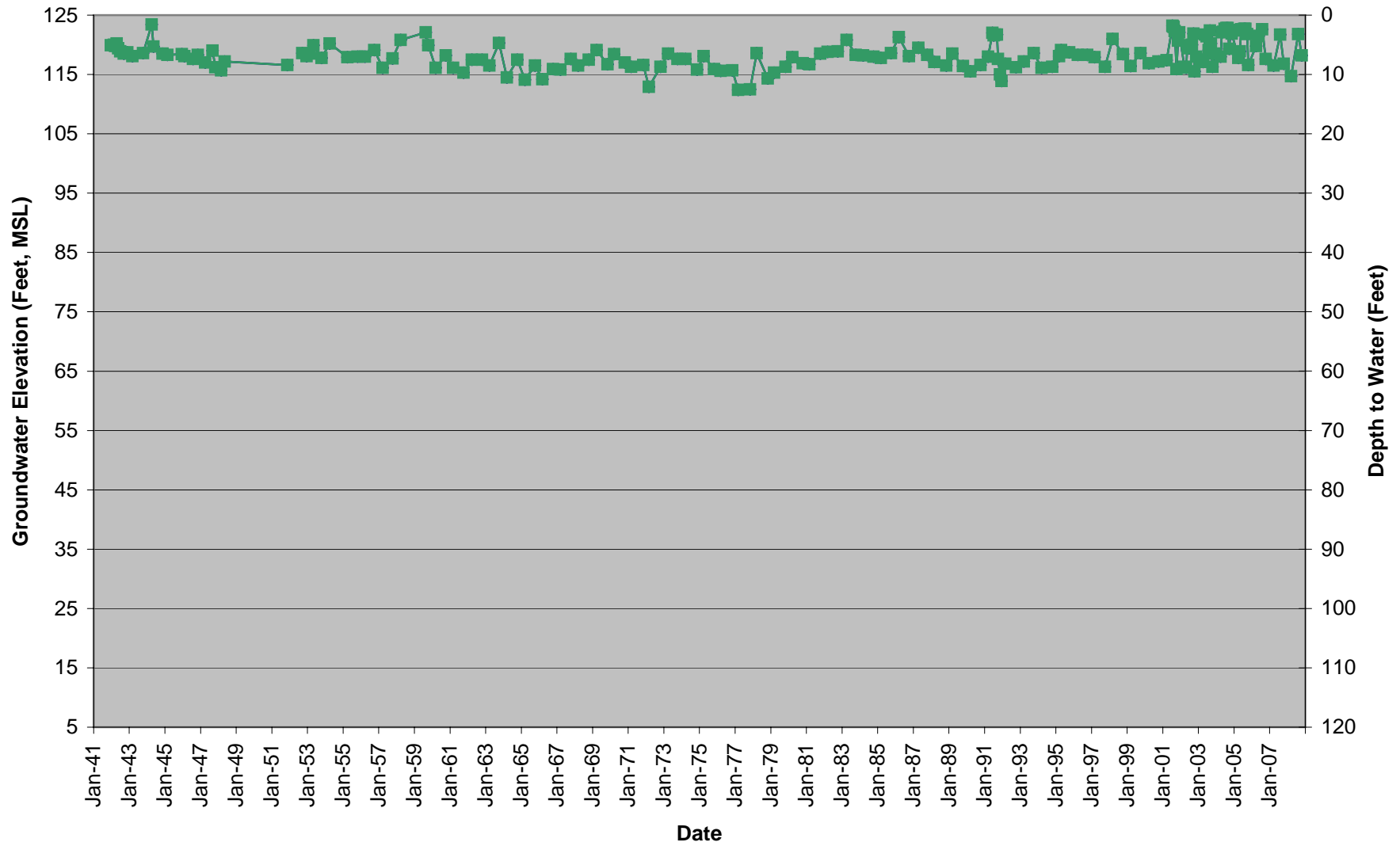
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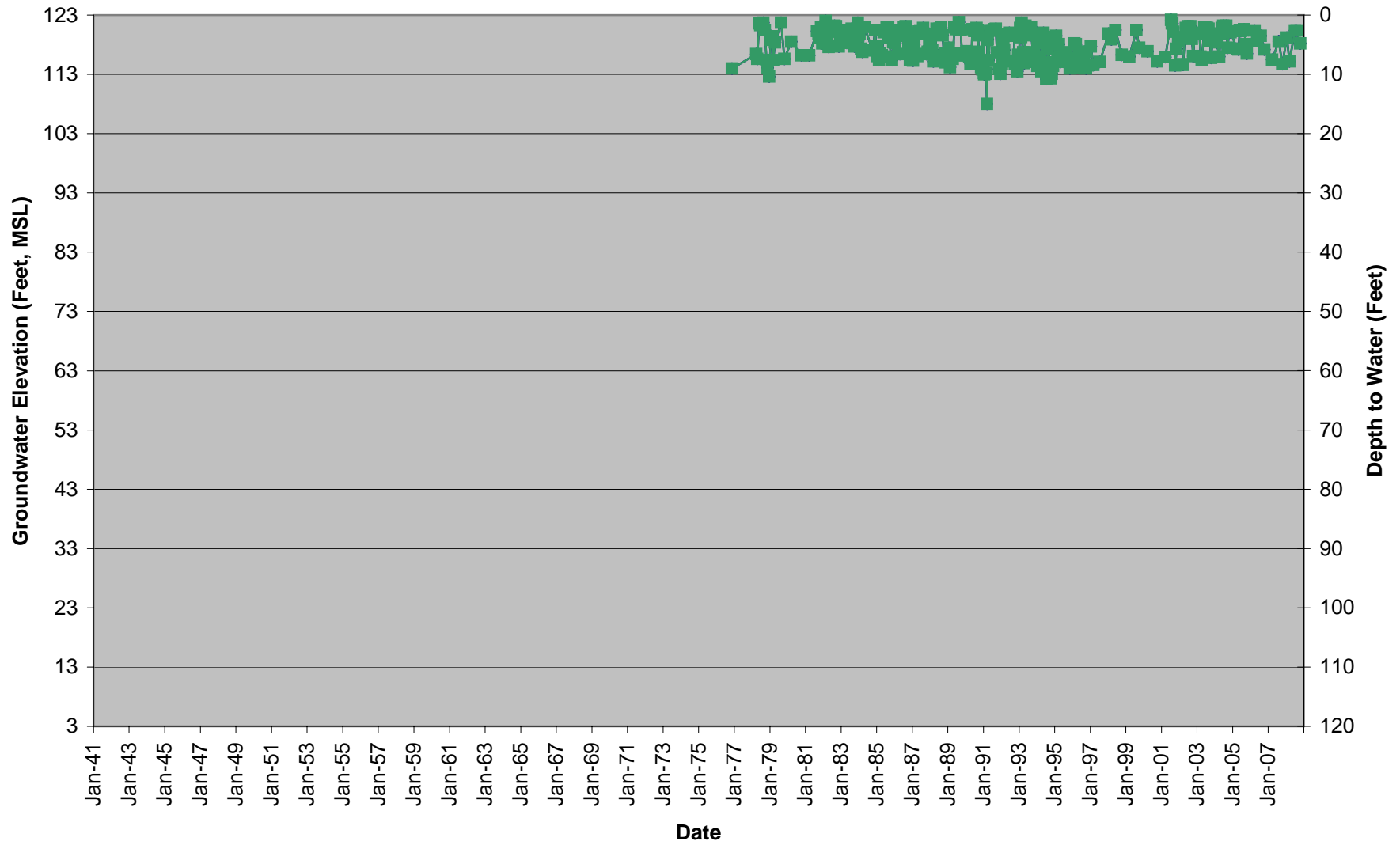
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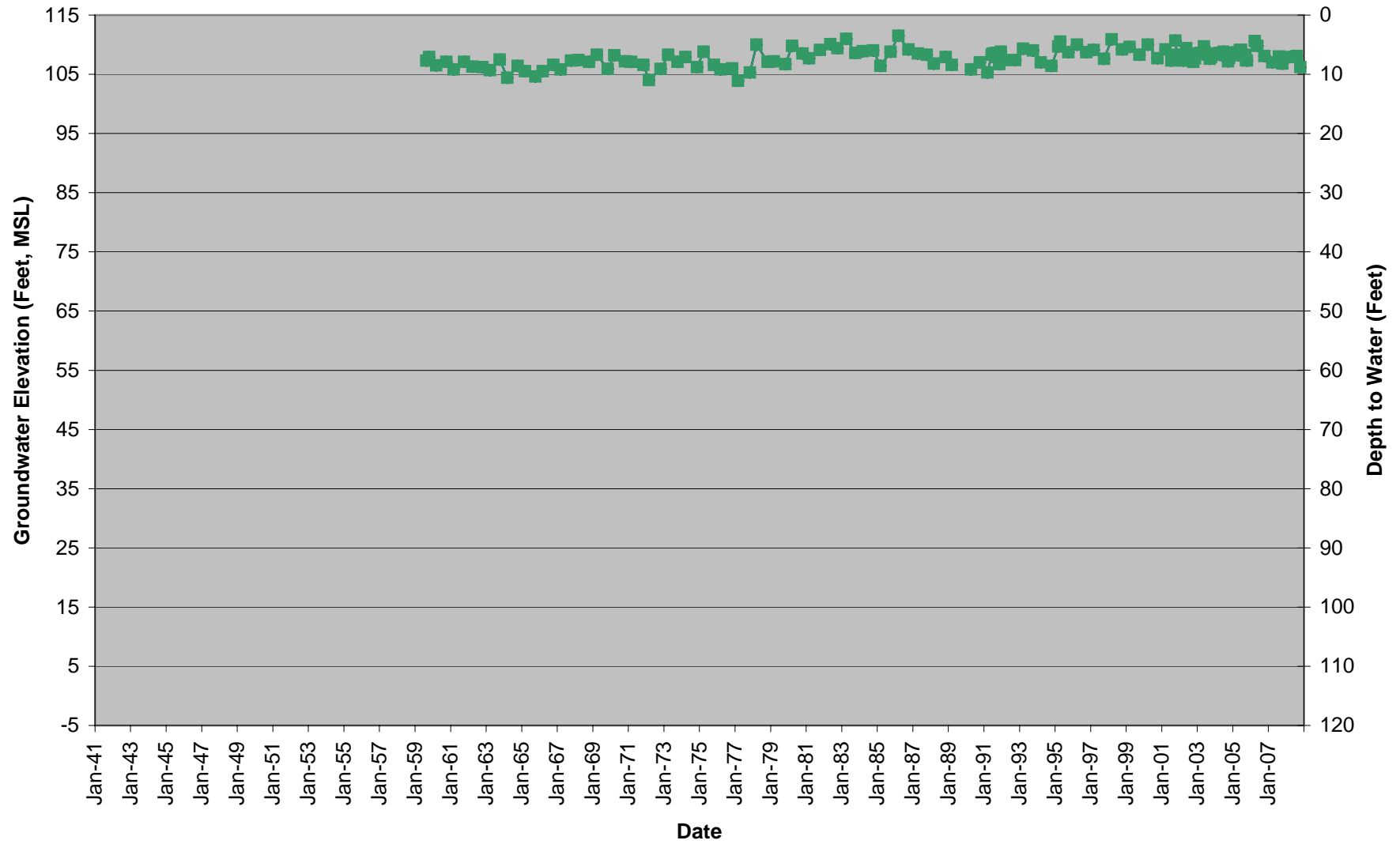
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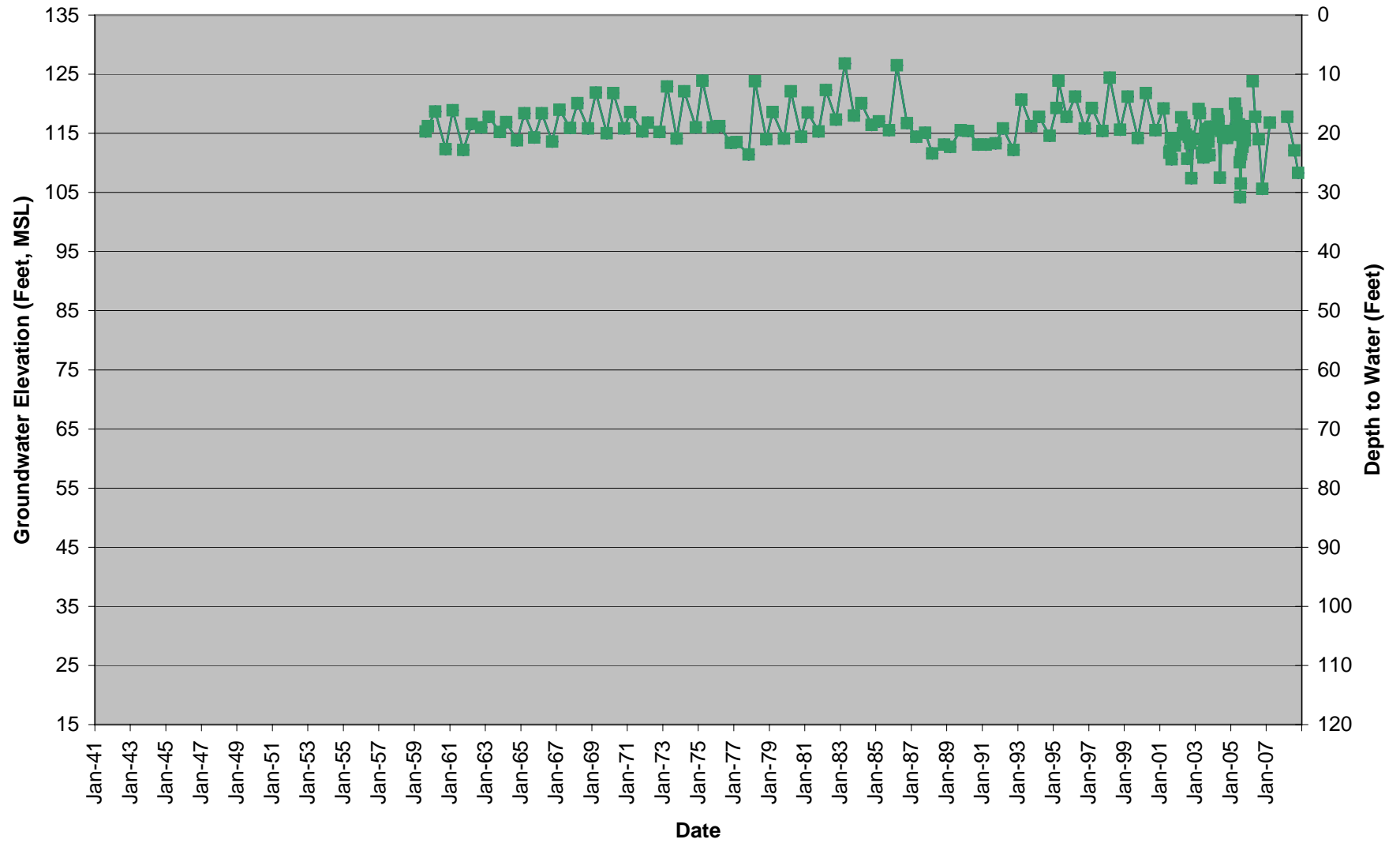
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# Hydrograph 20N01W07B001M

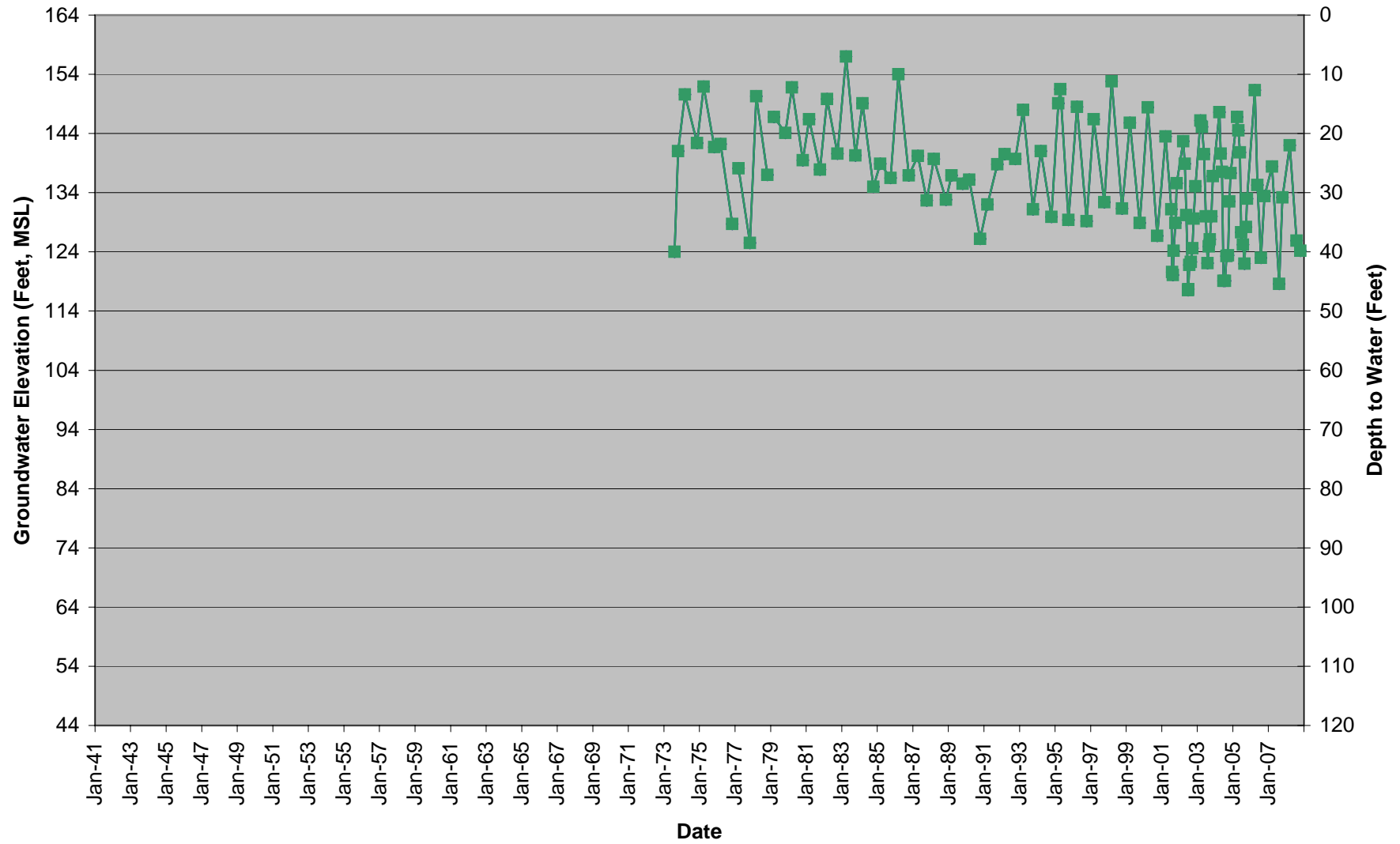


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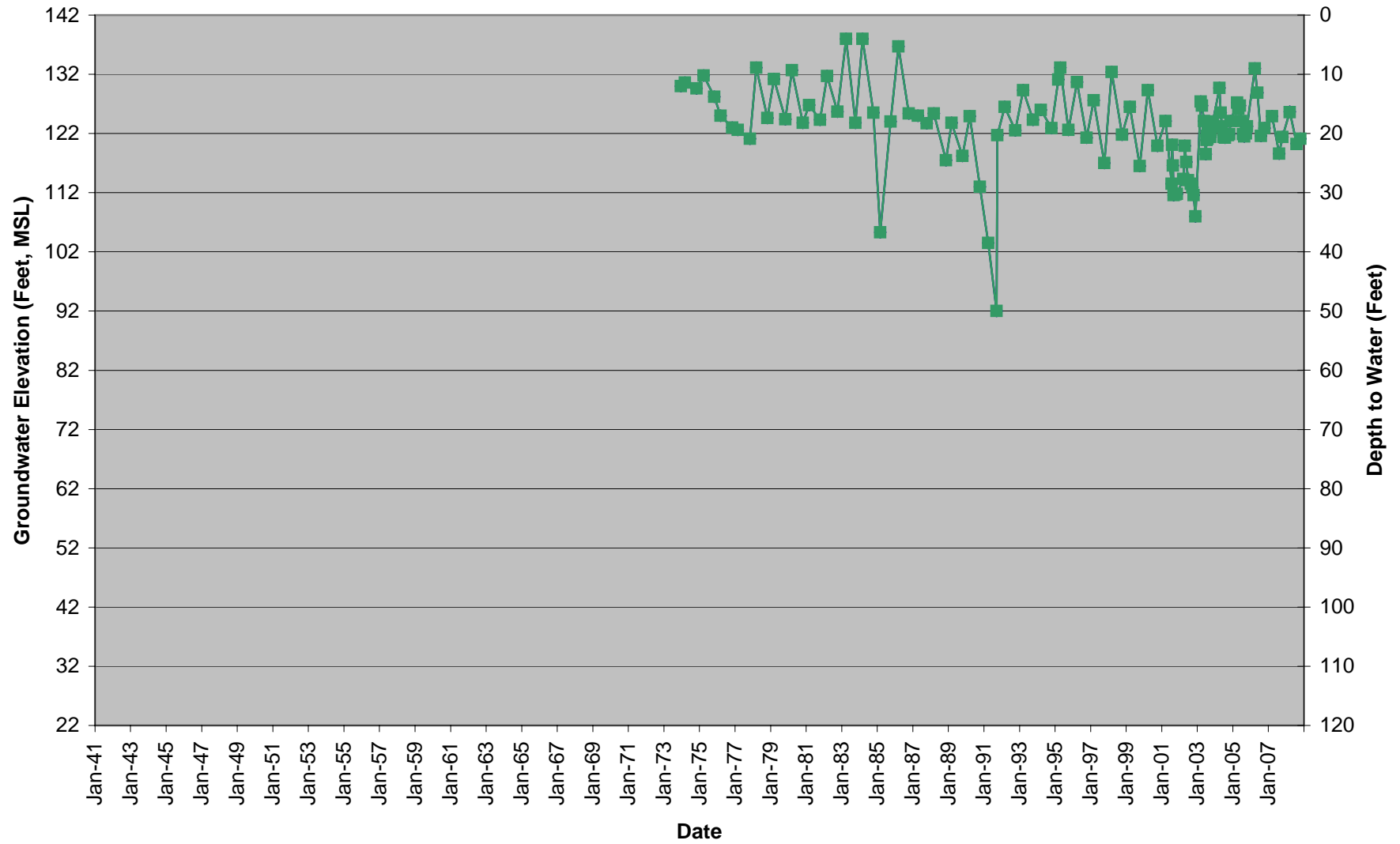




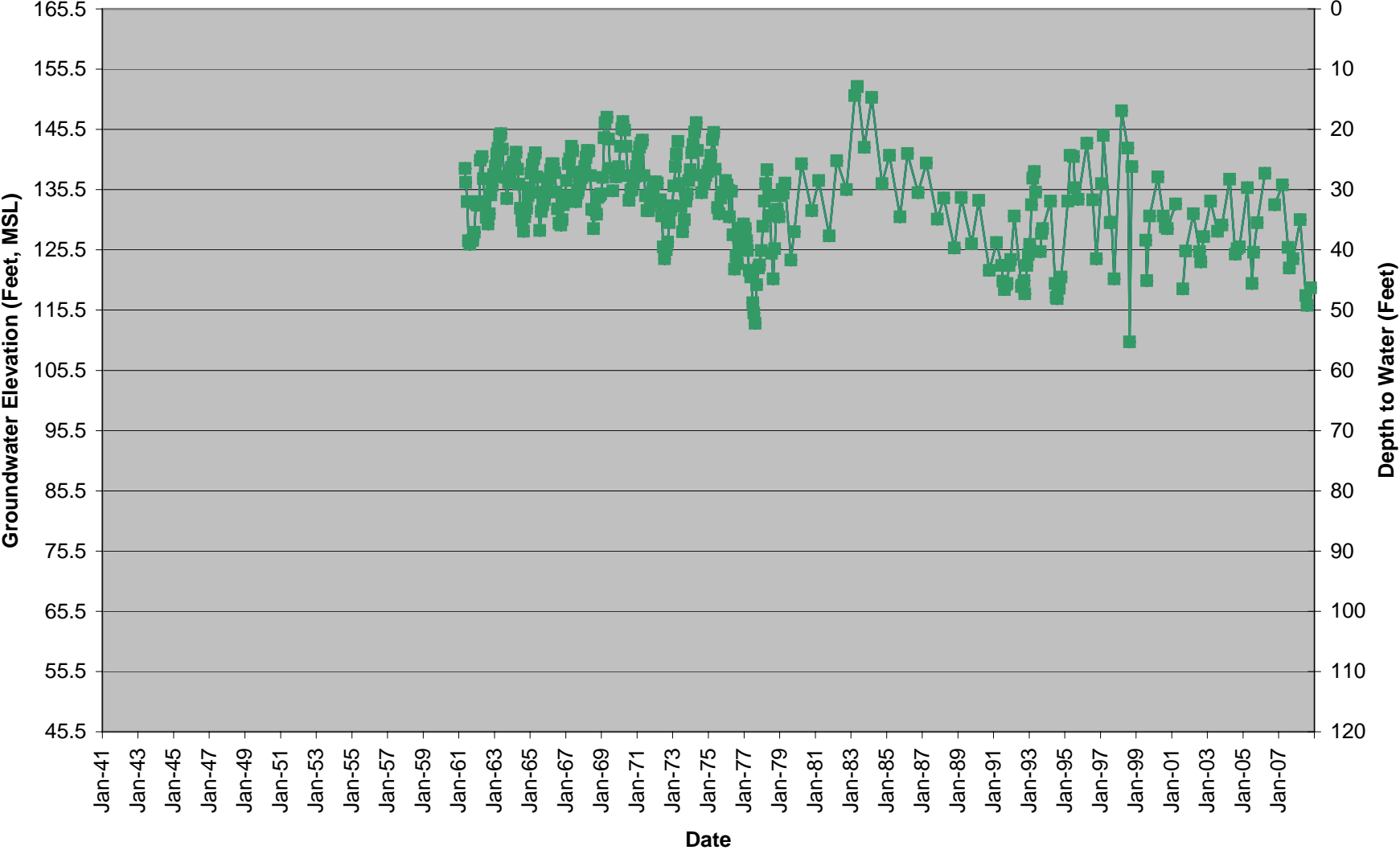
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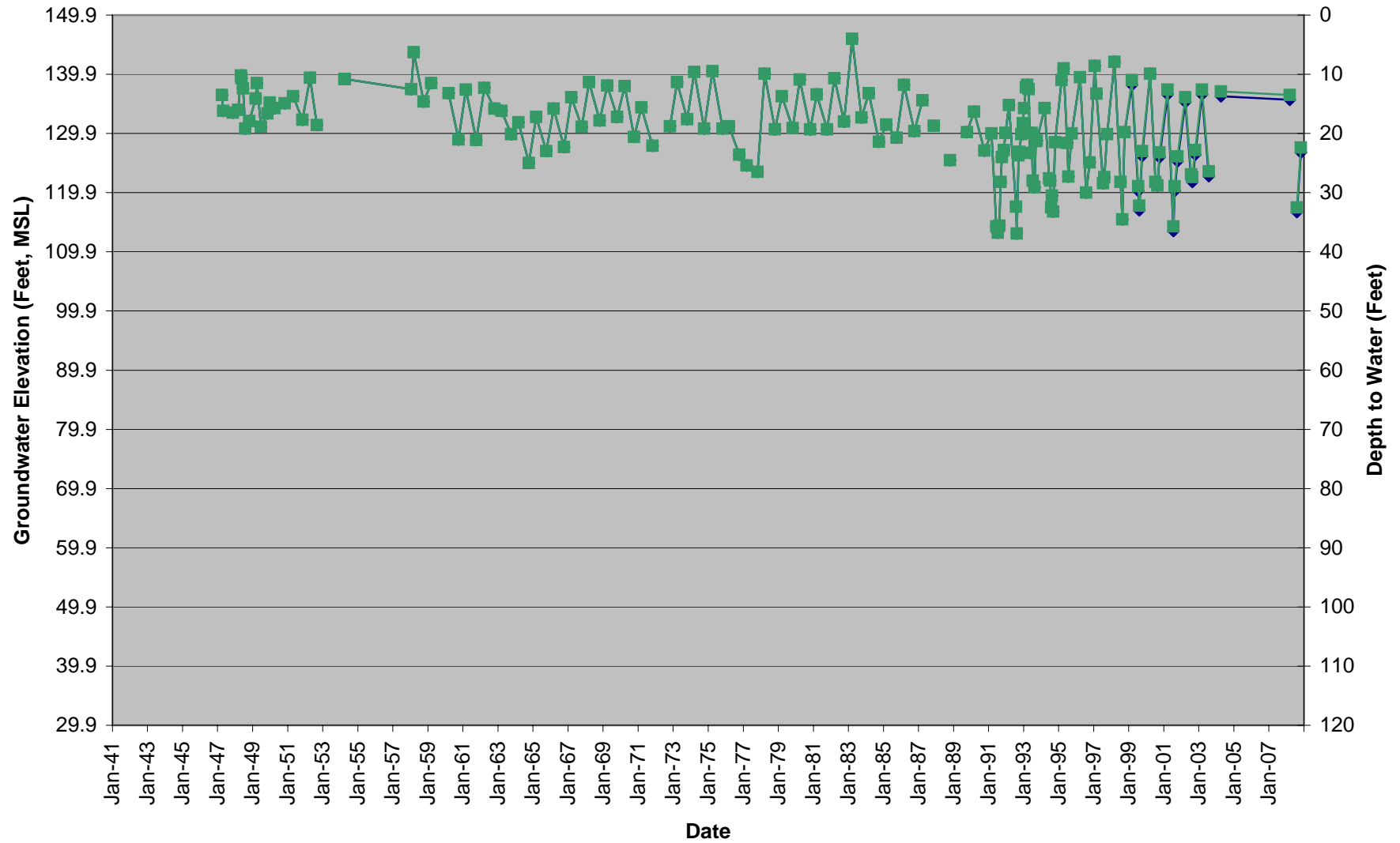
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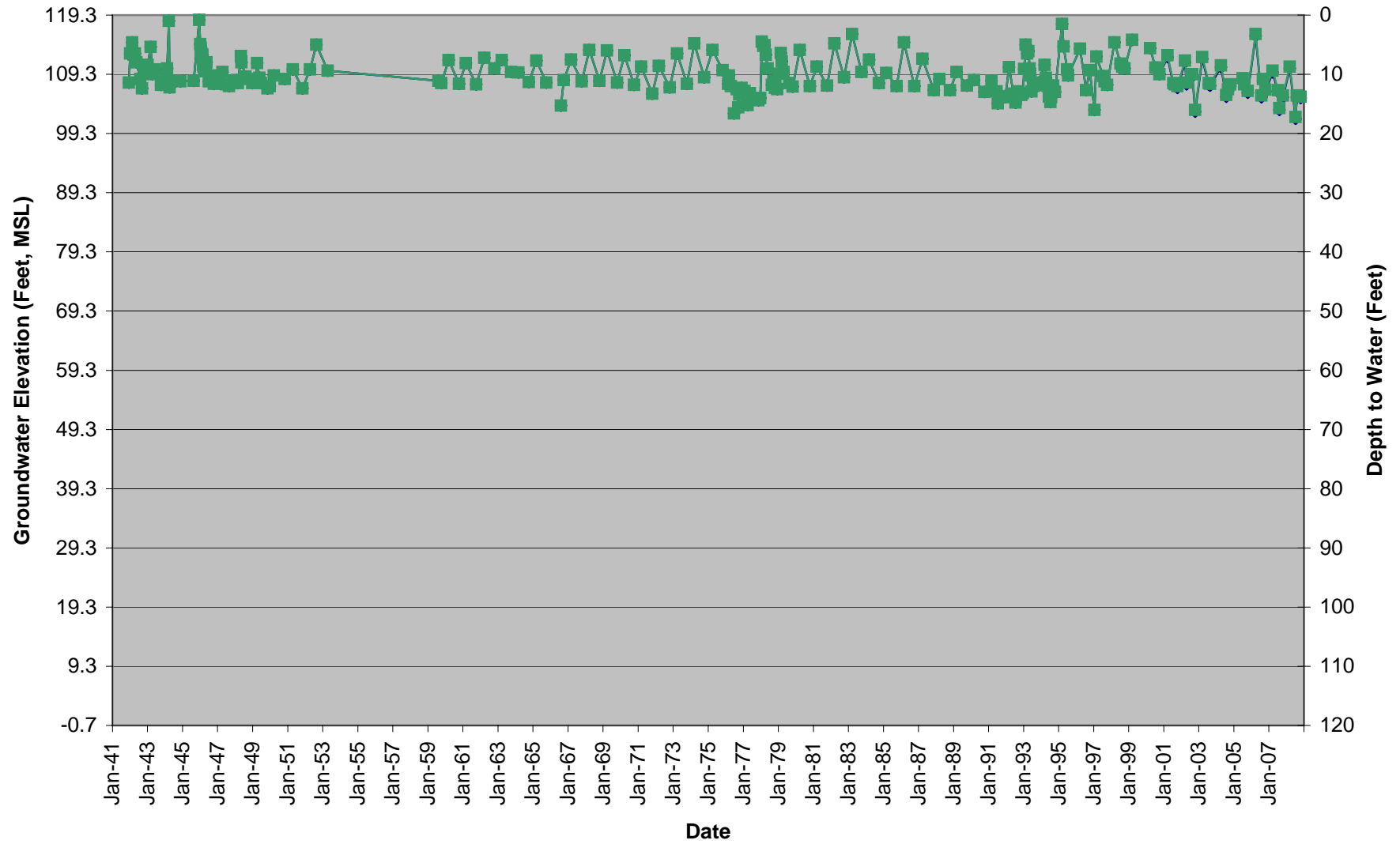
Hydrograph 22N01E20K001M



# Hydrograph 22N01W05M001M



# Hydrograph 21N01W23J001M



## **Appendix F – Section 106 Cultural Resource Consultation**



# United States Department of the Interior



BUREAU OF RECLAMATION  
Mid-Pacific Regional Office  
2800 Cottage Way  
Sacramento, California 95825-1898

IN REPLY REFER TO:

MP-153  
ENV-3.00

SEP 30 2008

CERTIFIED – RETURN RECEIPT REQUESTED

Mr. Milford Wayne Donaldson  
State Historic Preservation Officer  
Office of Historic Preservation  
1416 9th Street, Room 1442-7  
Sacramento, California 95814

Subject: Compliance with Section 106 of the National Historic Preservation Act for a Collaborative Water Management Program in Glenn County, California (Tracking #08-NCAO-190)

Dear Mr. Donaldson:

The Bureau of Reclamation is initiating the National Historic Preservation Act (NHPA) Section 106 consultation process and seeking your concurrence with our finding of no adverse effect on historic properties. Reclamation proposes to partially fund the Stony Creek Fan Conjunctive Water Management Program (SCF Program) to study surface and groundwater management in three adjacent service areas between the Cities of Orland and Hamilton City (Figure 1). The expenditure of Federal funds constitutes an undertaking as defined in Section 301(7) of the NHPA (16 U.S.C. 470), as amended. Reclamation is consulting with your office pursuant to the 36 CFR Part 800 regulations that implement Section 106 of the NHPA.

## Project Description

The SCF Program is a collaborative effort among the Orland-Artois Water District (OAWD), the Orland Unit Water Users Association (OUWUA), and the Glenn-Colusa Irrigation District (GCID). As part of this program, seven test-production wells will be installed within the three service areas (Figures 2-3). The proposed test-production wells will be drilled using a large truck-mounted reverse circulation rotary drilling rig equipped with a mud pump, pipe rack, and drilling fluid holding tank/shaker system. The drilling rig and associated equipment will occupy an area measuring approximately 100 feet by 100 feet at each site. No off-site discharge of drill cuttings or fluids will occur during drilling. The completed OUWUA wells 1 and 2 and GCID wells 5 through 7 will consist of an 8-foot by 10-foot concrete well pad located up to 30 feet from the open irrigation canals, a pump house enclosure, and a 20-inch-diameter discharge pipe. The concrete pad will be situated on or adjacent to the canal berm and the discharge pipe will be placed in a trench that will be excavated through the berm from the well site to the canal (Figure 4). The completed OAWD wells 3 and 4 will consist of two concrete pads, one pad measuring about 33 feet by 31 feet that will support the wellhead and another pad approximately 8 feet by 10 feet that will help support the 20-inch-diameter aboveground discharge pipe. The concrete pads will be situated between 20 and 30 feet from the existing underground pipeline to which the discharge pipe will be connected (Figure 5; Photos 1-9). Once installation is complete, the canal berms will be recontoured to their original form. Access for vehicles and equipment will be directly off the adjacent paved roads and ditch bank roads. No improvements for site access will be required.

### Area of Potential Effects

The area of potential effects (APE) for cultural resources was determined to be an area measuring 100 feet by 100 feet at test-production well sites 1 through 7, totaling 10,000 square feet (0.23 acres) at each location. Table 1 identifies the locations of each well site and their associated facility and jurisdiction. The APE includes currently cultivated land, fallow agricultural land, and existing irrigation facilities operated by OUWUA, OAWD, and GCID. Orland Laterals 130 and 60 were constructed as part of Reclamation's Orland Project and are managed by OUWUA. The OAWD conveyance system is an entirely piped network. The Glenn-Colusa Canal (GCC) was constructed by GCID (Figure 6).

Table 1 Location of Test-Production Wells

	Location	Quadrangle	Facility
Well 1	NW¼NW¼ sec. 18, T. 22 N., R. 2 W.	Kirkwood	Reclamation Orland Unit Lateral 130
Well 2	NW¼NW¼ sec. 29, T. 22 N., R. 2 W.	Hamilton City	Reclamation Orland Unit Lateral 60
Well 3	NE¼NE¼ sec. 30, T. 22 N., R. 2 W.	Orland	OAWD, N of Road 20 in abandoned orchard
Well 4	NW¼NE¼, sec. 4, T. 21 N., R. 2 W.	Hamilton City	OAWD, in almond orchard
Well 5	Un-sectioned, T. 21 N., R. 1 W.	Hamilton City	GCID, on berm of Glenn-Colusa Canal next to rice fields
Well 6	Un-sectioned, T. 21 N., R. 1 W.	Hamilton City	GCID, on berm of Glenn-Colusa Canal at Stony Creek siphon
Well 7	Un-sectioned, T. 22 N., R. 1 W.	Hamilton City	GCID, on berm/road of Glenn-Colusa Canal

### Data Review

Reclamation reviewed its archaeological site index and project data in an effort to identify historic properties within the APE. The only cultural resources identified within the APE include the OAWD water conveyance facilities, Orland Lateral 130, Orland Lateral 60, and the GCC. The OAWD was formed in 1954 for the purpose of contracting with Reclamation for a supplemental surface water supply from the Central Valley Project (CVP). The OAWD consists of 28,988 acres interspersed with non-District lands in a checkerboard-like pattern. The water distribution system was constructed between 1976 and 1983 and includes about 100 miles of buried pipelines ranging from 8 inches to 96 inches in diameter. OAWD receives up to 53,000 acre-feet of CVP water annually through five permanent and three temporary turnouts on the Tehama-Colusa Canal, which was built between 1965 and 1980 as part of the Sacramento Canals Unit of the CVP (Department of Interior 1981; data provided by OAWD). Proposed well sites 3 and 4 will be integrated into this conveyance network within fallow and currently cultivated orchards.

The Orland Project was authorized by the Secretary of the Interior in October 1907. The project incorporates parts of Glenn, Tehama, and Colusa Counties. The hub of the project is the town of Orland in northern Glenn County. The Orland Project is irrigated by Stony Creek, a tributary of the Sacramento River that drains the east side of the North Coast Range. The Orland Project consists of two main dams to store water (East Park and Stony Gorge), two diversion dams (Rainbow and Northside), 17 miles of canals, and 139 miles of laterals. Lateral 130 is a lateral of the North Canal, which originates at the Northside Diversion Dam. Northside Diversion Dam, completed in 1913, is on Stony Creek about 5 miles northwest of Orland (Reclamation 1961:574). Lateral 130 diverges to the south from the North Canal west of I-5 and is approximately 8.5 miles long. Lateral 60 is a sub-lateral of Lateral 130. Both Lateral 130 and Lateral 60 are open, concrete-lined ditches. The OUWUA has operated the project since October 1, 1954. Proposed well sites 1 and 2 are located within the Orland Project conveyance system adjacent to Lateral 130 and Lateral 60, respectively.



The GCID (formerly the Central Irrigation District) was organized on November 22, 1887, becoming the fourth irrigation district organized under the Wright Act of March 1887 (Davis 1984:10). The GCID owns, operates, and delivers water through the 65-mile-long GCC into a complex system that currently includes over 900 miles of laterals and drains. The primary water supply for GCID is derived from the Sacramento River Pump Station located north of Hamilton City. GCID holds pre- and post-1914 water rights to divert natural flow from the Sacramento River and negotiated an agreement (or settlement contract) with Reclamation to divert 825,000 acre-feet annually, including 105,000 acre-feet of CVP project water (Department of Interior 1981). GCID also holds water rights to divert water from various other streams, including Stony Creek and the Colusa Basin Drain.

The GCC is the main canal, and one of the first facilities built, within GCID. Construction of the GCC (formerly the Central Canal) started November 9, 1889 (Davis 1984:12). The canal was designed to be about 6 feet deep with a bottom width of approximately 65 feet. By November 1891, forty miles of the 65 miles of canal had been excavated before construction was halted. Due to a great deal of litigation over water rights, financial constraints for project construction, and other impediments such as marketing irrigation water, the Central Irrigation District subsequently changed ownership several times. The Central Irrigation District was invalidated in 1893 as a consequence of a legal technicality (Davis 1984:16). The Central Canal and Irrigation Company took over the irrigation system, continued construction in 1904, and completed the Central Canal in 1908 (Davis 1984:19-20). Ownership of the irrigation system was subsequently assumed by the Sacramento Valley Irrigation Company, then the Sacramento Valley West Side Canal Company. The Glenn-Colusa Irrigation District was formed in 1919 to acquire all of the facilities of the Central Irrigation District and began official operations on March 1, 1920. Portions of the GCC have been recorded in Colusa County (CA-COL-283H) in 2007 and Glenn County (CA-GLE-605H) in 2008 during the Caltrans District 3 Rural Conventional Highways Inventory Project. Only these two small portions of the GCC have been formally recorded. Proposed well sites 5, 6, and 7 are located within the GCID conveyance system adjacent to the unrecorded portion of the GCC.

#### **Determination of Eligibility**

Reclamation applied the criteria of eligibility (36 CFR Part 60.4) for listing on the National Register of Historic Places (NRHP) to the OAWD water conveyance facilities, Orland Lateral 130, Orland Lateral 60, and the GCC. The OAWD system is less than 50 years old and is not eligible for consideration as an historic property. This distribution system does not appear to possess characteristics of design, construction, or association that have exceptional importance in the history of agricultural development or the Sacramento Canals Unit of the CVP in the Sacramento Valley.

Little of the Orland Project has been evaluated for inclusion on the NRHP. Stony Gorge Dam and the Orland House are the only components of the Orland Project that have been determined eligible for inclusion on the NRHP under Criteria A and C of the criteria for evaluation at 36 CFR Part 60.4. A project-wide evaluation of eligibility for the Orland Project has not yet been implemented. Reclamation recognizes that the Orland Project may possess significance as the first Federal water project entirely within California, as it applies to the themes of water conveyance and the development of agriculture in the west and, more specifically, in the northern Central Valley of California. Reclamation is seeking funds to conduct a project-wide determination of eligibility and historic context. In the interim, Reclamation assumes, for the purposes of this undertaking, that the Orland Project is eligible for inclusion in the NRHP under Criterion A as the first Reclamation water project in California that encouraged the agricultural and economic development of the Sacramento Valley. Lateral 130 and Lateral 60 are assumed eligible as contributing features of the Orland Project for the purposes of this specific undertaking.

Neither the portions of the GCC recorded by Caltrans, nor the entire canal, were evaluated for listing on the NRHP as part of the Caltrans inventory project. Reclamation determined that evaluating the GCC for inclusion on the NRHP is outside the scope of this undertaking. Therefore, for the purposes of this specific undertaking, Reclamation also assumes that the GCC is eligible for listing on the NRHP under Criterion A for its association with the early agricultural and economic development of Glenn County and the Sacramento Valley.

Reclamation consulted with the Enterprise Rancheria, Grindstone Rancheria, and Paskenta Band of Nomlaki Indians on August 11, 2008, to invite their assistance in identifying sites of religious and cultural significance pursuant to the regulations at 36 CFR Part 800.4(a)(4). One response was received from the Enterprise Rancheria on August 22, 2008. No concerns were expressed regarding the presence of sites of religious or cultural significance within the APE.

Based on the above findings, Reclamation concludes that there will be no adverse effect on historic properties resulting from Reclamation partially funding the SCF Program pursuant to 36 CFR Part 800.5(b). Installing wells 1 and 2 next to Lateral 130 and Lateral 60, respectively, will not adversely affect the qualities and characteristics that would make these facilities potentially eligible for listing on the NRHP as contributing elements of the Orland Project. Installing wells 5 through 7 along the GCC will also not adversely affect the qualities and characteristics that would make the GCC potentially eligible for listing on the NRHP. Installation of the proposed wells and discharge pipes will not alter the canal prism and associated features or the ability of these facilities to convey water, which is the purpose for which they were built. Reclamation invites your comments on our delineation of the APE and our efforts to identify historic properties. Reclamation requests your concurrence with our finding that the proposed undertaking will have no adverse effects on historic properties. Please contact Amy Barnes at 916-978-5047, or [abarnes@mp.usbr.gov](mailto:abarnes@mp.usbr.gov), if you have any questions about this project.

Sincerely,

*15/ Michael A. Chotkowski*

Michael A. Chotkowski  
Acting Regional Environmental Officer

Enclosures - 11

References:

Davis, Cynthia F.

1984 *Where Water is King: The Story of Glenn-Colusa Irrigation District*. Glenn-Colusa Irrigation District

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1981 *Water and Power Resources Service Project Data, 1981*, Engineering and Research Center, Denver Federal Center. U.S. Government Printing Office, Denver.

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1961 *Reclamation Project Data*. United States Department of the Interior, Government Printing Office, Washington, D.C.

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October 23, 2008

In Reply Refer To: BUR081002A

Michael A. Chotkowski  
Acting Regional Environmental Officer  
United States Department of the Interior  
Bureau of Reclamation  
Mid-Pacific Regional Office  
2800 Cottage Way  
Sacramento, CA 95825-1898

BUREAU OF RECLAMATION OFFICIAL FILE COPY RECEIVED		
OCT 29 2008		
CODE	ACTION	SIGNATURE & DATE
MPIS	✓	Barnes 10-29-08

Re: Stony Creek Fan Conjunctive Water Management Program Installation of Seven Test Wells, Glenn County, California (Tracking No. 08-NCAO-190).

Dear Mr. Chotkowski:

Thank you for consulting with me regarding the above noted undertaking. Pursuant to 36 CFR Part 800 (as amended 8-05-04) regulations implementing Section 106 of the National Historic Preservation Act (NHPA), the Bureau of Reclamation (BUR) is the lead Federal agency for this undertaking and is seeking my comments on the effects that the proposed project will have on historic properties. The subject undertaking consists of the drilling and operation of seven test wells in the service areas of the Orland-Artois Water District (OAWD), the Orland Unit Water Users Associations (OUWUA), and the Glenn-Colusa Irrigation District (GCID). The BUR is providing funds for this undertaking and has identified the expenditure of federal funds for this project as an undertaking pursuant to review under Section 106 regulations.

The wells will be drilled using a truck-mounted drilling rig and will affect an area of approximately 100 feet in diameter at each drill site. The completed wells 1 and 2 (OUWUA) and wells 5 through 7 (GCID) will each include an 8x10 foot concrete pad, a pump house enclosure, and a 20-inch diameter discharge pipe. These will be located up to 30 feet from an open irrigation canal. Wells 3 and 4 (OAWD) will each consist of two concrete pads, one 8x10 feet in size to support the well head and one 33x31 feet to support the discharge pipe. These will be installed 20-30 feet from existing irrigation pipelines. The discharge pipes from these wells will be installed either into the existing irrigation canal berms and the berms reconfigured to their original appearance, or into the existing buried irrigation pipelines. Access will be via existing roadways. The BUR has determined that the seven well sites, which total an area of approximately 0.23 acre, comprise the Area of Potential Effects (APE).

The water conveyances that will be connected to these wells include Orland Laterals 130 and 60 operated by the OUWUA and the Glenn-Colusa Canal that was constructed

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by GCID. The distribution facilities of the OAWD are entirely piped and were all constructed later than 1976. Laterals 10 and 60 are concrete lined open canals that are components of the Orland Project and were constructed in the early 20<sup>th</sup> century. The BUR has recognized that the Orland Project, the first reclamation project in the Central Valley, is potentially eligible for the National Register of Historic Places. However, lacking funds at present to fully document the Orland project, the BUR has assumed that Laterals 130 and 60 are eligible for the NRHP under criteria A and C as contributing elements of the Orland Project for the purposes of this undertaking.

Construction of the Glen Colusa Canal (GCC) began circa 1889 (as the Central Canal) although it was not completed until 1908. The BUR acknowledges that this is one of the oldest continuing operating irrigation canals in the Central Valley. However, at present, the BUR cannot, within the scope of this undertaking, conduct the level of assessment necessary for a formal NRHP eligibility determination of this 65 mile water conveyance and its numerous laterals and sub-canals. Consequently, the BUR proposes to treat the GCC as eligible under NRHP criterion A for the purposes of this undertaking.

The BUR has determined that the activities involved with this undertaking are all within the realm of standard operation and upgrade/maintenance procedures and will not adversely affect the qualities (function, design, or appearance) of Lateral 130, Lateral 60, and the GCC that make them eligible for the NRHP. After reviewing your letter of September 30, 2008, and attachments, I have no objection to your proposed finding of No Adverse Effect for this undertaking. Be advised that under certain circumstances, such as unanticipated discovery or a change in project description, the BUR may have additional future responsibilities for this undertaking under 36 CFR Part 800.

Thank you for seeking my comments and for considering historic properties in planning your project. If you require further information, please contact William Soule, Associate State Archeologist, at phone 916-654-4614 or email [wsoule@parks.ca.gov](mailto:wsoule@parks.ca.gov).

Sincerely,

*Susan K Stratton for*

Milford Wayne Donaldson, FAIA  
State Historic Preservation Officer